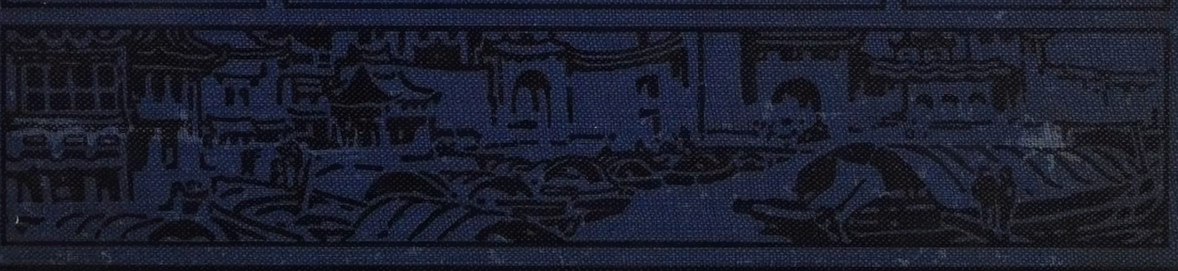
THE EARTH AND ITS PEOPLE

HIGHER BOOK

ATWOOD-THOMAS



ATWOOD-THOMAS HIGHER BOOK

The Earth and its People Series

The third and fourth years of work in a new series of geographies on the single-cycle plan. In the first of its component parts, "Nations beyond the Seas" (pages 1–340), the pupil completes his study of the world by regions and countries begun in the Lower Book. In the second part, "The United States among the Nations" (pages 343–528), he studies the place and setting of the United States among the nations of the world — education for citizenship. *Points of particular interest are:*

The unique organization of "Nations beyond the Seas," whereby the possessions of the European countries are treated in close association with the home countries. For example, see The British Isles, pages 16–45; British Lands in Africa, pages 46–67; British Lands in Asia, pages 68–93; the Commonwealth of Australia, pages 94–116; the Dominion of New Zealand, pages 117–122.

The treatment of the United States, which neither repeats nor parallels the work or the method of the chapters on the United States in "The Americas" which is given in the Lower Book. Here geographic influences in the development of our country — natural resources, historical background of our nation's growth, and our world relationships — are the subjects for study. See Contents, page vi.

The division of the text into unit studies, each carefully motivated and followed by check exercises. See pages 118–119, 158–162, 216–217, 373–375, 437–444, 478–483.

The excellent maps, including 40 pages of colored maps for the third-year work and 16 pages of colored maps for the fourth. A complete series of sectional maps of the continents of the Eastern Hemisphere shows product data against the regional background (pages 75, 140–141, 227, 277). In this way the pupil is helped to associate certain kinds of economic activity with certain types of regions. Map studies encourage interpretative study. See pages 64, 77, 97, 360, 364, 392.

The exercise and test material, which is varied and interesting and contains many suggestions for bright pupils. See pages 27, 44, 45, 51, 67, 79, 182, 356, 384, 395, 413, 420–421.

The illustrations, fresh, authentic, and accompanied by excellent legends. See pages 35, 65, 87, 130, 160, 347, 394, 443, 450.

The vocabulary, which has been carefully checked and graded to eliminate reading difficulties. Catalogue price, $2.00, subject to discount.

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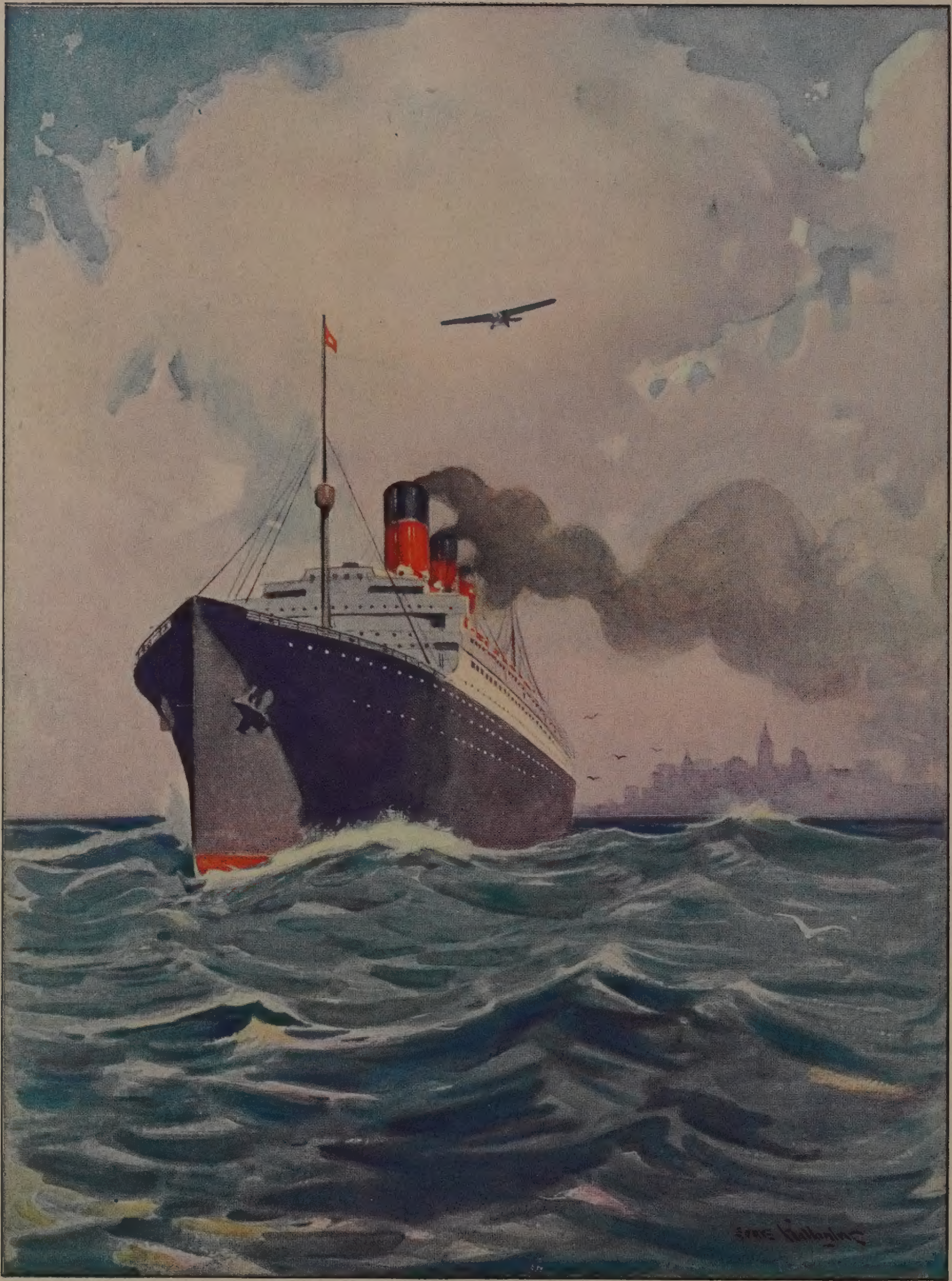
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AN OCEAN LINER BOUND FOR DISTANT LANDS

From a water-color by Sears Gallagher

THE EARTH AND ITS PEOPLE

HIGHER BOOK

BY
WALLACE W. ATWOOD
AND
HELEN GOSS THOMAS

ATWOOD GEOGRAPHY SERIES

GINN AND COMPANY
BOSTON · NEW YORK · CHICAGO · LONDON
ATLANTA · DALLAS · COLUMBUS · SAN FRANCISCO

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FOREWORD TO THE TEACHER

This book contains the third and fourth years of work in a new series of geographies on the single-cycle plan. Its two component parts are "Nations beyond the Seas" and "The United States among the Nations."

"Nations beyond the Seas" covers the countries of the Eastern Hemisphere, completing the systematic study of the earth by countries and regions. That study was begun in "The Americas," which comprises the second part of the *Lower Book* of this series. As in the case of "The Americas," the basic framework of "Nations beyond the Seas" is regional, and the maps, pictures, and text combine to visualize for children the natural regions which form the stage setting for the activities of the people in all parts of the Western Hemisphere.

Four simple types of natural regions suffice to classify the lands in a broad way: young, rugged mountains; old, worn-down mountains; uplands and plateaus; lowlands and interior plains. Each type has its distinctive characteristics, and each exerts certain well-defined influences on the activities of people. One of the great advantages in this regional classification is that it lends itself to consistent use throughout the world, and makes possible the effective use of correlated study. Throughout "The Americas" and "Nations beyond the Seas" similar regions are carefully correlated, and pupils are called upon constantly to apply knowledge in hand to the solution of new problems.

The use of the regional method by no means implies the neglect of political divisions. Each individual country receives due attention, and each one is illuminated against a vivid regional background.

One of the new and outstanding features of "Nations beyond the Seas" is its treatment of the possessions of the European nations in close association with the home countries. The study of the British Isles is followed by studies of the other parts of the British Empire in the Eastern Hemisphere. Similarly, the colonies of France, of the Netherlands, and of all other European countries which have outlying possessions are treated directly after the home country.

This procedure applies to the countries of Europe the plan which has been used so long and so successfully in connection with the United States and its possessions. It is sound pedagogically and geographically, for the home countries and their possessions are so intimately interrelated that to be studied with full understanding they need to be presented in the closest possible association. For three years previous to the publication of this book, this new plan of organization has been tried out in the schools of one of the large Eastern cities. The teachers who have used it report that it conserves time, quickens interest, and gives pupils a keener appreciation of the relationships between the home countries and the possessions than has ever been attained under the old plan of dissociated study.

"The United States among the Nations" brings pupils back to their own country, providing them with a means of studying its place and setting among the nations of the world. This study neither repeats nor parallels the work or the method of the chapters on the United States in "The Americas." Rather, it approaches the United States from a world point of view which is distinctly in advance of the earlier treatment of the country.

The outstanding features of the material for this fourth year of study are (1) the geographic influences in the growth and development of our country; (2) the utilization of our natural resources and the necessity for their wise conservation; (3) the historical background of our economic growth; and (4) our world relationships, especially in the fields of commerce and industry. The prime objective is to provide an interesting, worthwhile study of the United States which shall be a definite contribution to education for citizenship.

In physical proportions this study of the United States in its world relationships utilizes less page space than the material provided for the third year of study. This is due to the greater amount of problem and project work which pupils are called upon to do in the fourth year of study. More work of this kind and less of the type of text study required in earlier grades is consistent with growing maturity of mind, and conforms to the best standards of progressive education.

Each unit of study in this book is introduced by a motivated approach which challenges the interest of the pupil and gives him an objective toward which to work. The motivation takes a variety of forms according to the subject matter of the study units. Many of the approaches present problems for solution, and many call for some form of self-activity on the part of the pupil.

Each study unit closes with exercises or tests which enable the pupil to prove his knowledge of the important geographic facts and relationships which he has discovered. Much time and thought have been given to making the tests varied and interesting, and many suggestions are offered for extra work for pupils who work faster than the average.

The maps provide the pupil with a rich field for the discovery of facts of physical, economic, and political geography. Nearly every study unit calls for thoughtful map-reading, and throughout the book map work and text study are intimately interwoven.

The section of the book designed for the third year of study is provided with a complete series of sectional maps of the continents of the Eastern Hemisphere. One of the most valuable features of these maps is the showing of product data against the regional background, whereby the pupil is constantly reminded of the association of certain kinds of economic activity with certain types of regions. The section of the book designed for the fourth year of study contains a variety of new maps which make graphic the subject matter of each chapter.

In order to save the time ordinarily wasted in hunting blindly for places on maps, all maps in this book to which frequent reference is made for the purpose of locating places are indexed in atlas style. Wherever in the text the pupil is directed to locate a place on a map, the index is given.

Every picture has been selected for the purpose of playing a definite rôle in the visualization of the lessons, and every one is an integral part of the plan of study. The pictures are provided with legends which include descriptions, explanations, and questions, and which greatly increase their usefulness.

As in the case of the *Lower Book* in the series, the vocabulary in this volume has been checked by a graded word list prepared by Dr. B. R. Buckingham and Dr. E. W. Dolch. This graded word list contains about 20,000 entries. In the making of it, fifteen published and unpublished vocabulary studies were combined and then supplemented by original material secured from more than 16,000 children. Hence the vocabulary of this book is well within the grasp of the pupils for whom it is intended. Wherever words likely to be new to pupils are introduced, they are explained; and avoidance of reading difficulties leaves the pupils free to give their undivided attention to the subject matter.

The authors of this series believe that the highest function of geographical study is to break down the barriers of provincialism and to foster in American youth a just and sympathetic attitude toward the people of other countries and their problems. The books are offered to the public in the hope that they may play a worthy part in training American boys and girls for intelligent and broad-minded citizenship.

WALLACE W. ATWOOD
HELEN GOSS THOMAS

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The Castle of Chillon on Lake Geneva

NATIONS BEYOND THE SEAS

THE OLD WORLD

I. THE EASTERN HEMISPHERE AND ITS PEOPLE

1. Foreword

The New World and the Old World. During your study of North America and South America you learned that the white men who explored and settled the two continents of the Western Hemisphere came from Europe. When the people of Europe learned of the new-found lands on the western side of the Atlantic Ocean, they began to call the Americas the New World. Later, the lands of the Eastern Hemisphere which had been known so much longer came to be called the Old World. These names have never been given up, and we still call the lands of the Western Hemisphere the New World, and those of the Eastern Hemisphere the Old World. Australia was discovered and settled much later than the Americas, but since it is located in the Eastern Hemisphere we include it among the lands of the Old World.

The older nations. We speak of the people of a country as the *nation*. Long before the discovery of America the people of some of the older nations in Europe had written books and plays, made wonderful buildings, monuments, and statues, and painted beautiful pictures. When you visit the Mediterranean countries, you will see the remains of temples and palaces which the Greeks and Romans built more than a thousand years before Columbus was born,— buildings so beautiful that architects copy their designs to this very day. All over western Europe you will see churches and castles which were built in the days when people thought that Europe, Asia, and Africa were all the lands there were in the world. *See Figures 1 and 2.*

You may have seen copies of some of the statues made long ago by the Greek sculptors, or of some of the paintings of the "old masters," as the earliest of the famous European painters were called. Every art student of today studies the work of the early Greek sculptors and the old masters of painting, and every student of literature reads the plays and poetry written by the Greeks and Romans of long ago.

The people of some of the older nations had also made many wonderful discoveries and invented many useful things long before they knew anything about the Americas. For example, the ship's compass, which makes it possible for sailors to know their directions at sea, was invented by the Chinese over seven hundred years ago. In Europe one of the greatest inventions made before the discovery of America was the printing press. Can you explain why this was a very important invention?

New nations from old nations. As people from Europe settled in the New World, the Americas became new homelands for people of the older nations. You already know that most of the white people of South America and southern North America are of Spanish or Portuguese descent, while the people of Canada are mostly of British or French descent.

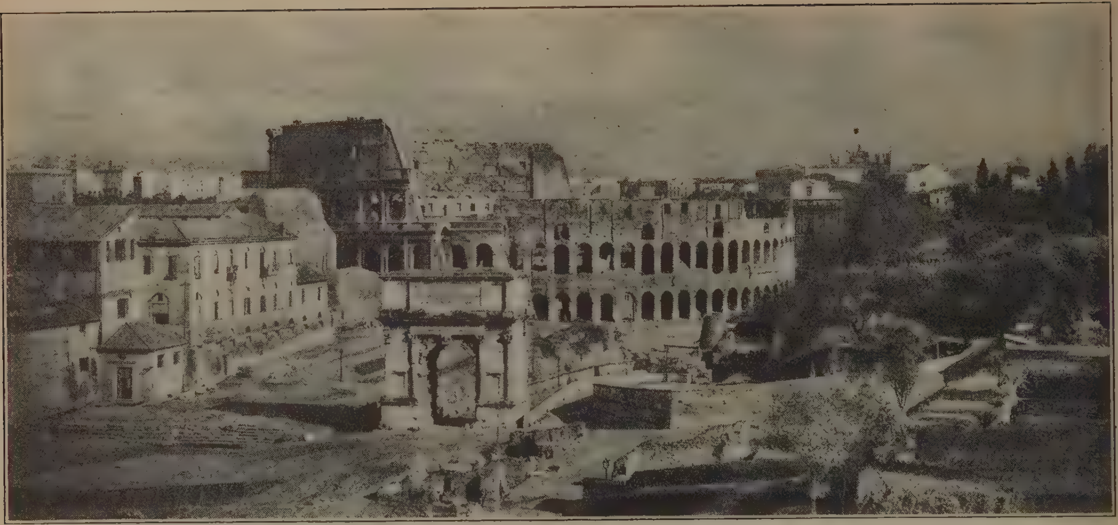


Figure 1. The Arch of Titus and the Colosseum at Rome, in Italy. The arch was built by an emperor of the Romans in the year 81. How long ago was that? Beyond the arch you can see the ruins of the huge amphitheater called the Colosseum, which was used by the Romans as a place for holding outdoor entertainments.

Do you know why we speak English in our country? It is because the largest numbers of people in the United States are descended from people who once lived in Great Britain and Ireland, the European countries where the English language is spoken. But many of the other nations of Europe are also represented in our population. Perhaps you yourself are descended from people who were born in one of the countries on the continent of Europe, or you may have neighbors and friends whose families came to the United States from one of those countries years ago.

In our own country and other countries of the Americas there are some people who have come from Asia and Africa, or whose families came from there. They too help to make up the new nations of the Western Hemisphere, but they are much fewer in number than the people of European descent.

Our trade with the Old World. Ever since the earliest days of settlement, the people of the New World have traded with the people of Europe. Today ships carry more goods back and forth between ports of western Europe and ports on the Atlantic coast of the United States than between any other parts of the world. Turn to the map on pages 338–339 and prove that this is true. Notice also how much trade there is between the countries of western Europe and the countries of South America which border the Atlantic Ocean.

Our own country also carries on much trade across the Pacific Ocean with the people of Japan, China, and the Philippine Islands, and our trade with the people of the East Indies, Africa, Australia, and New Zealand is growing more important every year. Turn to the map on pages 338–339 again and find all the lands named in this paragraph.

The lands of the Eastern Hemisphere. The lands of the Eastern Hemisphere, or the Old World, are the continents of Europe, Asia, Africa, and Australia, with all the neighboring islands. Any map of the world will show you that Europe and Asia form one great stretch of land. When we wish to speak of

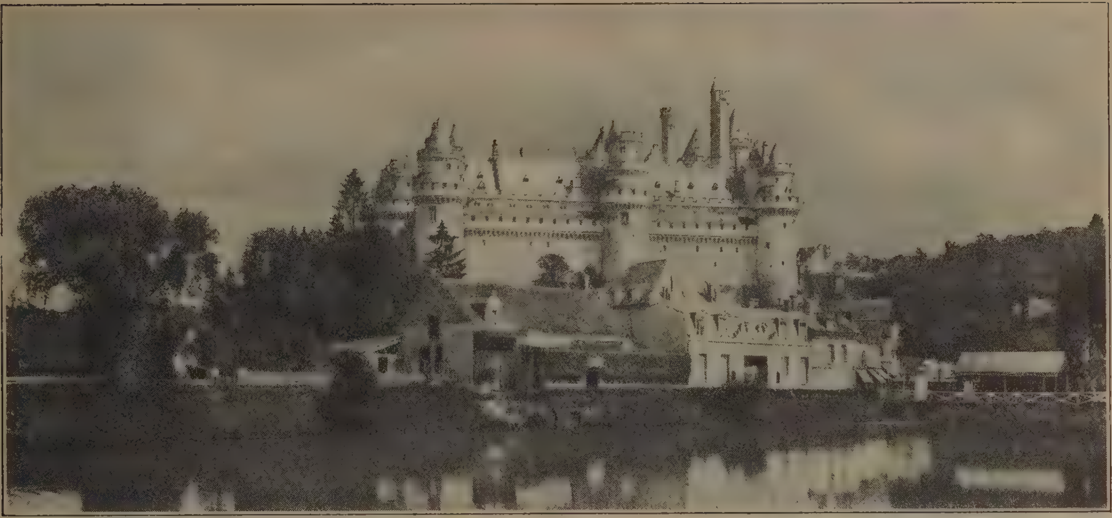


Figure 2. One of the old châteaus, or castles, in France. This beautiful château was built as a home for a French nobleman in the year 1390. How many years before Columbus discovered America was that? How much older is the château than the oldest building now standing in the town, city, or state in which you live?

this great land mass as a whole, we call it Eurasia. Europe forms the western part of it, and Asia the central and eastern parts.

As you study about the lands of the Old World, keep these questions in mind:

1. In what parts of the Old World do the people live and work much as we do in our country, and why?
2. In what parts of the Old World do the people live and work very differently from the way we do, and why?
3. In what parts of the Old World do the people live and work somewhat as those in the tropical parts of the Americas do, and why?

Sentences to complete. Give the correct words to complete the following sentences. You may use the map on pages 334–335 if you need to.

1. The continents of the New World are _____ _______ and _____ _______.
2. The continents of the Old World are ______, ____, ______, and ________.
3. Eurasia is made up of the continents of ______ and ____.
4. Africa is separated from Europe by the _____-_______ Sea.
5. The islands southeast of Australia form the country of ___ _______.

Some things to do. 1. If you were born in some country of the Old World, locate that country on a wall map or on the map on pages 330–331.

2. If you were born in the United States, ask your father or mother what country of the Old World was the homeland of your family before they came to America. You may find that your father's people came from one country, and your mother's from another. On the map locate the Old World countries which you can claim as family homelands.

Special credit work. 1. Find out at least six other languages besides English which are spoken by people in various countries of Europe. Use a wall map or the map on pages 330–331 to show your classmates the country where each language is spoken.

2. Many interesting stories for boys and girls written by people in the Old World have been *translated*, or turned, into English. Try to find such a story and read it. Tell the story briefly to your classmates, and point out the author's country on the map.

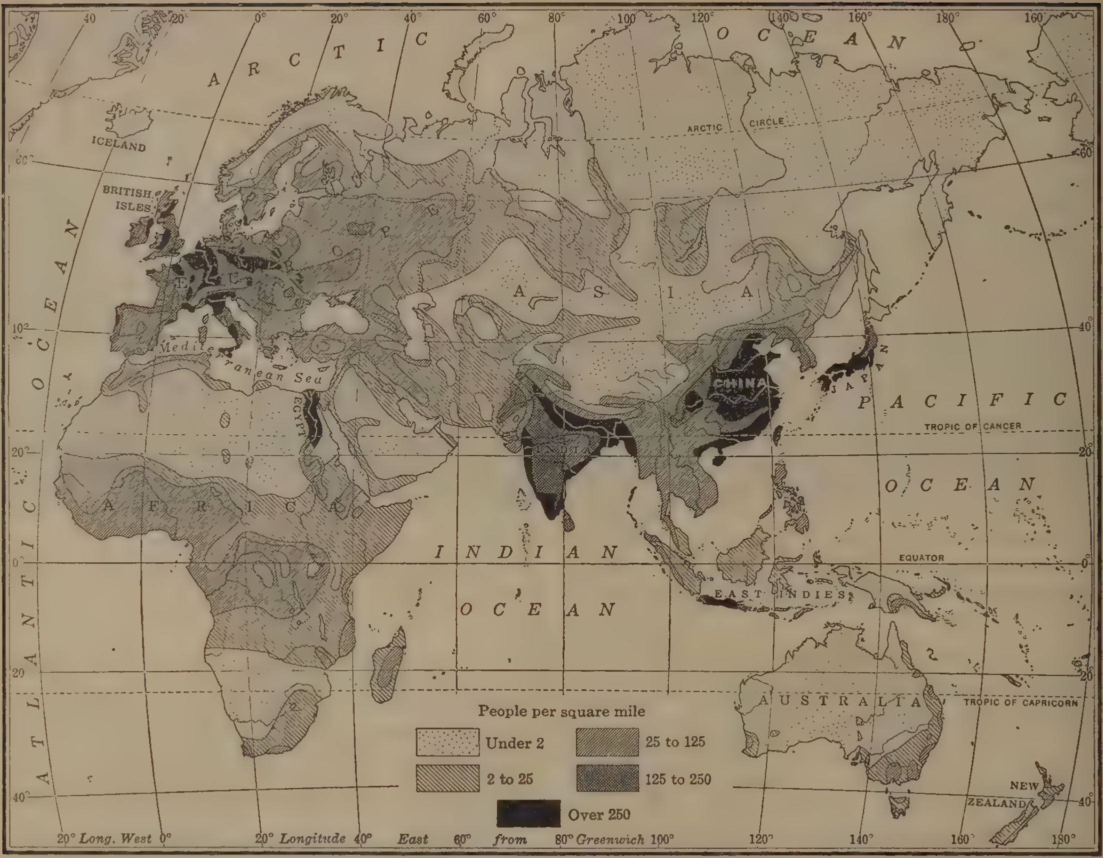

ARCTIC OCEAN
ICELAND
BRITISH ISLES
ATLANTIC OCEAN
EUROPE
ASIA
ARCTIC CIRCLE
Mediterranean Sea
EGYPT
AFRICA
INDIA
CHINA
JAPAN
PACIFIC OCEAN
TROPIC OF CANCER
EQUATOR
INDIAN OCEAN
EAST INDIES
AUSTRALIA
TROPIC OF CAPRICORN
NEW ZEALAND
People per square mile
Under 2
2 to 25
25 to 125
125 to 250
Over 250
20° Long. West 0° 20° Longitude 40° East 60° from 80° Greenwich 100° 120° 140° 160° 180°

Figure 3. Distribution of people in the Old World.

2. First Glimpses of the Old World

In your study of the Americas you discovered that some parts of the New World are very densely, or thickly, settled, and that other parts are very sparsely, or thinly, settled. You will find that the same thing is true in the Old World. Some parts of the Old World are more crowded with people than any part of the New World is, and other parts are almost without people. As you study this section, watch for reasons for these differences in the distribution of population.

Lands crowded with people. On Figure 3 find the three large areas in the Old World which are most crowded with people. In what continent are two of the areas? In what continent is the third?

One of the densely populated areas which you have discovered is in eastern Asia. Over five hundred million people live crowded together in eastern China and Japan. The second densely populated area is India. Over three hundred million people live there. The third area is the western half of Europe, where three hundred and fifty million people live crowded together.

Reasons for crowding. Can you think of any reasons why so many people live crowded together in the areas that you have located on the population map? Figure 4 and the map on pages 6–7 will help you to discover why these parts of the Old World are so densely populated.

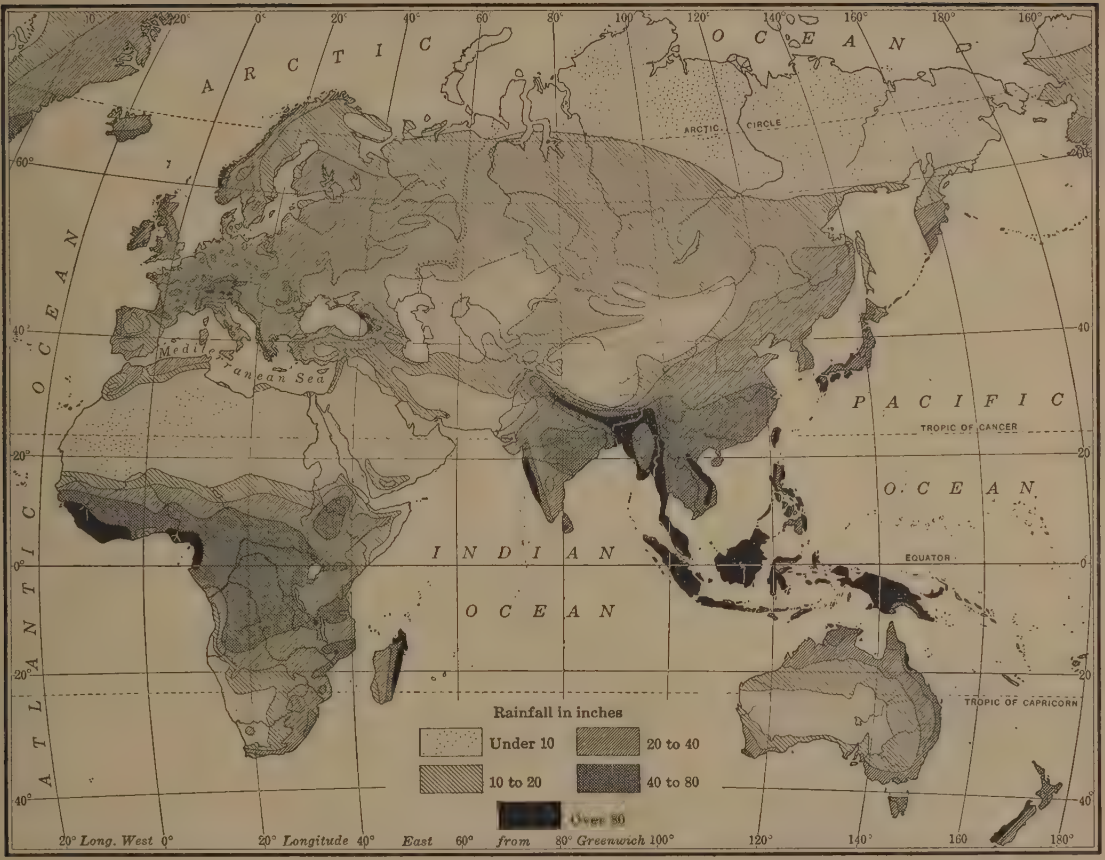

ARCTIC
OCEAN
ARCTIC CIRCLE
ATLANTIC
OCEAN
Mediterranean Sea
PACIFIC
OCEAN
TROPIC OF CANCER
EQUATOR
INDIAN
OCEAN
TROPIC OF CAPRICORN
Rainfall in inches
Under 10
20 to 40
10 to 20
40 to 80
Over 80
20° Long. West 0°
20° Longitude 40° East 60° from 80° Greenwich 100°
120°
140°
160
180°
60°
40°
20°
0°
20°
40°

Figure 4. Distribution of rainfall in the Old World.

Turn first to the regional map of the Old World on pages 6–7 and locate the three very thickly populated areas of Eurasia that you found on Figure 3. Are they mostly mountainous lands, or have they large stretches of plains?

Now study Figure 4. Remember that in order to be well suited to most kinds of farming a region should have at least 20 inches of rain each year. What does Figure 4 show about the rainfall in the three most densely populated parts of Eurasia?

You will remember that most of the people of the New World live in well-watered lowlands in the north and south temperate zones, where the temperature changes from season to season and the surface and climate are well suited to farming. Use the map on pages 6–7 and Figures 3 and 4 to prove that

1. Except for the Dekkan Plateau of India, the most thickly populated parts of the Old World are largely in the north temperate zone.

2. The three large areas of densest population in Eurasia are not in the coldest or highest parts of the Old World.

3. Within each of these three areas of Eurasia there are large stretches of lowland plains.

4. Most parts of the crowded areas of Eurasia have between 20 and 80 inches of rain each year.

Turn over to page 8.

MAP STUDIES

1. Plan a flight in an airplane in seven great "hops" as follows:

   (1) London (*C2*) to Moscow (*F2*)
   (2) Moscow to Bombay (*H4*)
   (3) Bombay to Tokyo (*N3*)
   (4) Tokyo to Sydney (*O8*)
   (5) Sydney to Cape Town (*E8*)
   (6) Cape Town to Cairo (*F3*)
   (7) Cairo to Paris (*D2*)

2. Over what thickly populated region shall you be flying on your first hop? Name a large city between London and Moscow where you might stop on this flight.

3. What regions shall you fly over on your second hop? Why have they fewer people than the plains that you saw on your first hop? Where shall you cross the natural boundary between Europe and Asia?

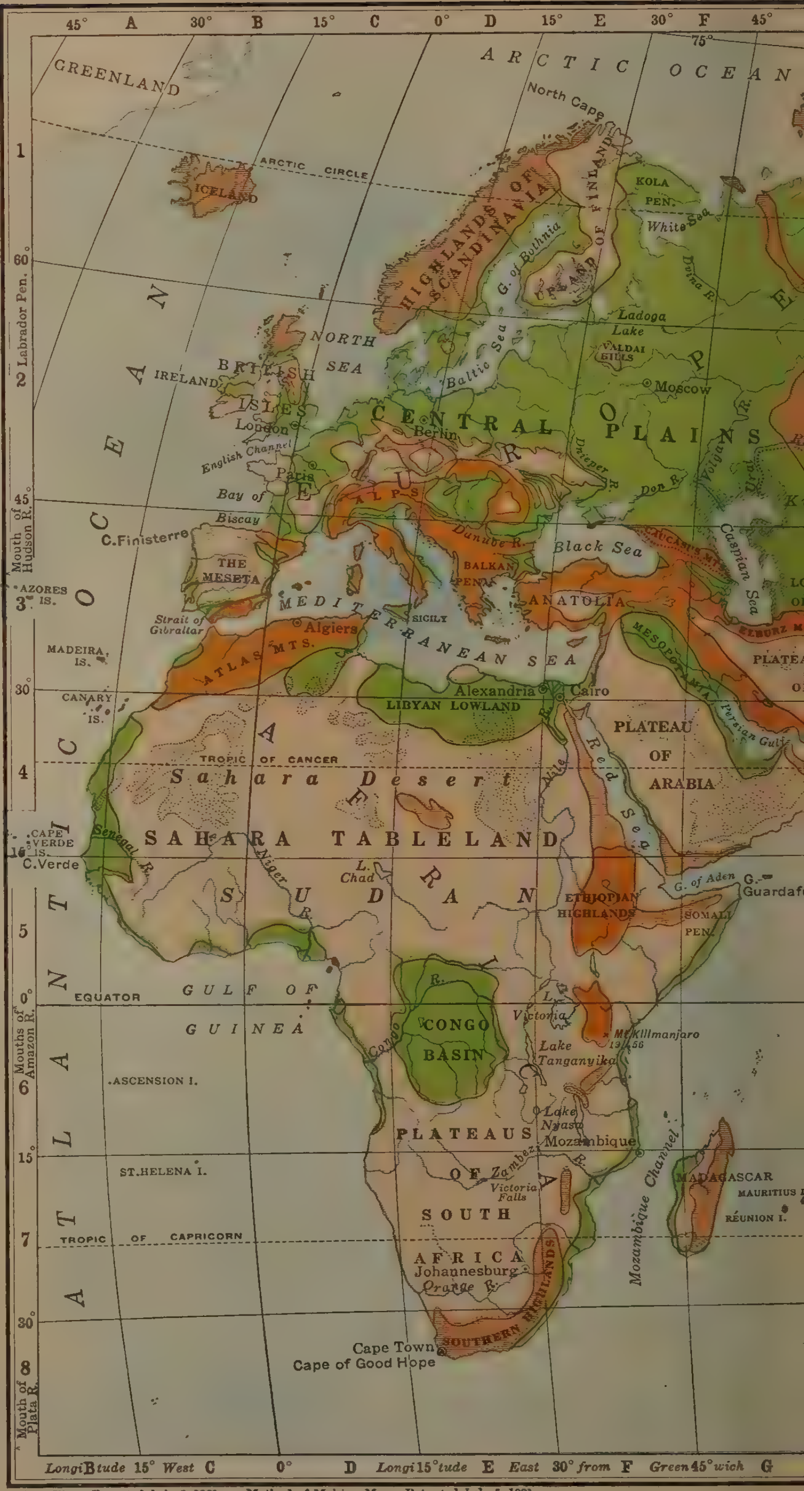
4. Over what two very crowded parts of Asia shall you fly on your third hop? At what large cities might you stop between Bombay and Tokyo?

5. What body of water shall you fly over on your fourth hop? What zone shall you cross during your flight over the Pacific Ocean?

6. What body of water shall you fly over on your fifth hop? In what zone shall you be during your flight from Sydney to Cape Town? At what other city in Australia might you stop on that flight?

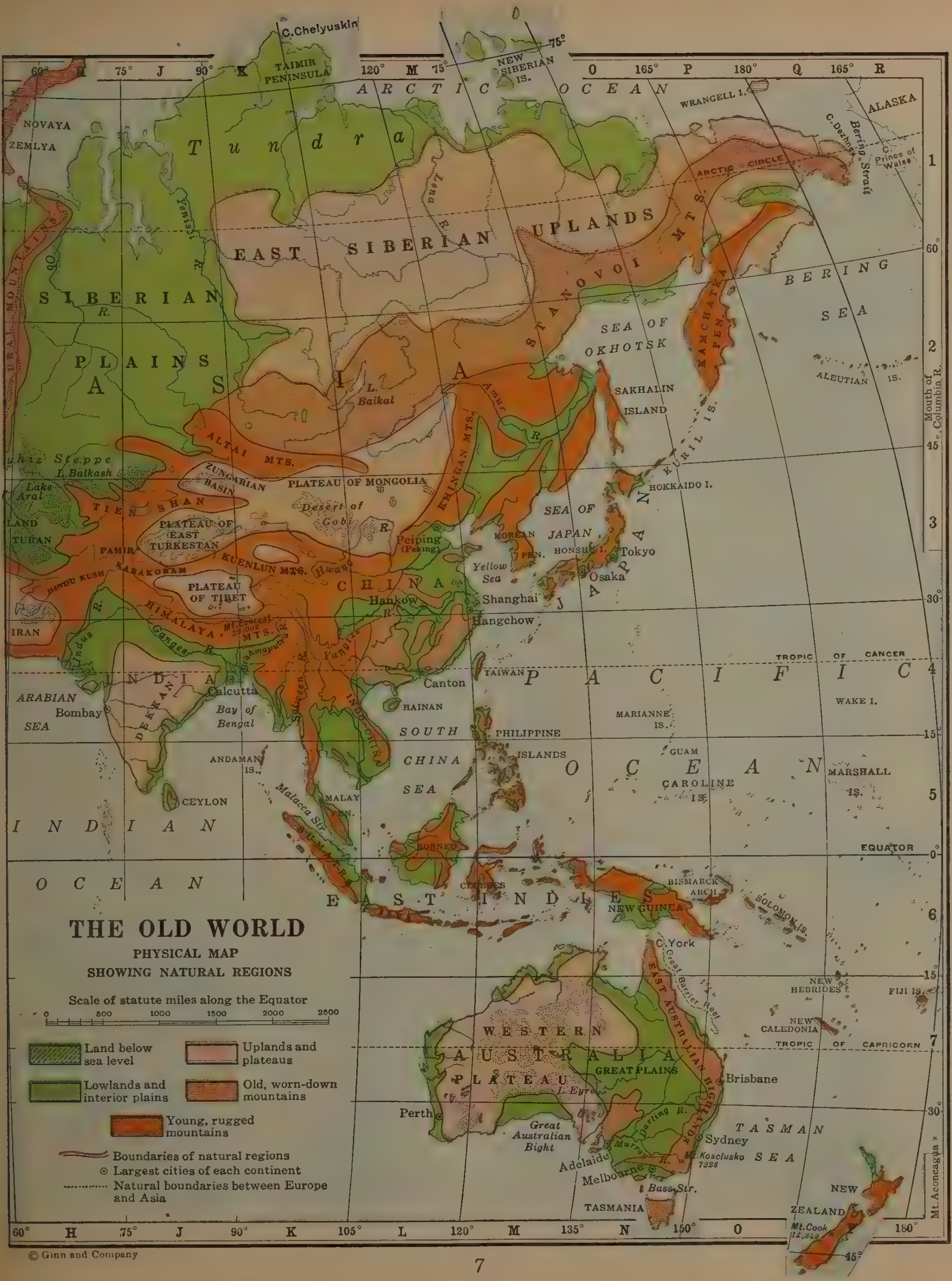
7. What regions shall you fly over on your sixth hop, from Cape Town to Cairo? What zone shall you cross on that flight? What desert shall you see as you cross the tropic of Cancer? What river valley shall you be following as you approach Cairo? What other large city could you visit near Cairo?

8. What sea and what mountains shall you fly over on your last hop, from Cairo to Paris?



45° A 30° B 15° C 0° D 15° E 30° F 45°
75°
ARCTIC OCEAN
GREENLAND
North Cape
ARCTIC CIRCLE
ICELAND
HIGHLANDS OF SCANDINAVIA
G. of Bothnia
UPLAND OF FINLAND
KOLA PEN.
White Sea
Dvina R.
Ladoga Lake
VALDAI HILLS
Moscow
NORTH SEA
Baltic Sea
BRITISH ISLES
IRELAND
London
English Channel
Paris
Berlin
CENTRAL PLAINS
EUROPE
Dnieper R.
Don R.
Volga R.
Ural R.
Bay of Biscay
C. Finisterre
ALPS
Danube R.
Black Sea
CAUCASUS MTS.
Caspian Sea
THE MESETA
BALKAN PEN.
ANATOLIA
AZORES IS.
Strait of Gibraltar
Algiers
SICILY
MEDITERRANEAN SEA
ELBURZ MTS.
MADEIRA IS.
ATLAS MTS.
MESOPOTAMIA
PLATEAU
CANARY IS.
Alexandria
Cairo
LIBYAN LOWLAND
PLATEAU OF ARABIA
Persian Gulf
TROPIC OF CANCER
Sahara Desert
Nile R.
Red Sea
CAPE VERDE IS.
C. Verde
Senegal R.
SAHARA TABLELAND
AFRICA
SUDAN
Niger R.
L. Chad
ETHIOPIAN HIGHLANDS
G. of Aden
G. Guardafui
SOMALI PEN.
ATLANTIC OCEAN
EQUATOR
GULF OF GUINEA
Congo R.
CONGO BASIN
L. Victoria
Mt. Kilimanjaro 19,456
Lake Tanganyika
ASCENSION I.
Lake Nyasa
Mozambique
PLATEAUS OF SOUTH AFRICA
Zambezi R.
Victoria Falls
Mozambique Channel
MADAGASCAR
MAURITIUS I.
RÉUNION I.
ST. HELENA I.
TROPIC OF CAPRICORN
Johannesburg
Orange R.
HIGHLANDS
SOUTHERN HIGHLANDS
Cape Town
Cape of Good Hope
1 2 3 4 5 6 7 8
60° 45° 30° 15° 0° 15° 30°
Labrador Pen.
Mouth of Hudson R.
Mouths of Amazon R.
Mouth of Plata R.
Longitude 15° West C 0° D Longi 15° tude E East 30° from F Green 45° wich G

Map Plate, Patented July 5, 1921 · Method of Making Maps, Patented July 5, 1921



THE OLD WORLD

PHYSICAL MAP
SHOWING NATURAL REGIONS

Scale of statute miles along the Equator
0
500
1000
1500
2000
2500
Land below sea level
Uplands and plateaus
Lowlands and interior plains
Old, worn-down mountains
Young, rugged mountains
Boundaries of natural regions
Largest cities of each continent
Natural boundaries between Europe and Asia
C. Chelyuskin
TAIMIR PENINSULA
NEW SIBERIAN IS.
ARCTIC OCEAN
WRANGELL I.
ALASKA
C. Dezhnev
Bering Strait
C. Prince of Wales
ARCTIC CIRCLE
NOVAYA ZEMLYA
Tundra
Yenisei R.
Lena R.
EAST SIBERIAN UPLANDS
URAL MOUNTAINS
SIBERIAN PLAINS
Ob R.
ASIA
STANOVOI MTS.
SEA OF OKHOTSK
KAMCHATKA PEN.
BERING SEA
ALEUTIAN IS.
Mouth of Columbia R.
SAKHALIN ISLAND
KURIL IS.
L. Baikal
Amur R.
ALTAI MTS.
Kirghiz Steppe
L. Balkash
Lake Aral
LAND TURAN
ZUNGARIAN BASIN
PLATEAU OF MONGOLIA
Desert of Gobi
KHINGAN MTS.
HOKKAIDO I.
TIEN SHAN
PLATEAU OF EAST TURKESTAN
PAMIR
KUENLUN MTS.
Hwang R.
Peiping (Peking)
KOREAN PEN.
SEA OF JAPAN
HONSHU I.
Tokyo
Osaka
JAPAN
Yellow Sea
HINDU KUSH
KARAKORAM
PLATEAU OF TIBET
CHINA
Hankow
Shanghai
Hangchow
Yangtze R.
IRAN
HIMALAYA MTS.
Mt. Everest 29,002
Indus R.
Ganges R.
Brahmaputra R.
TROPIC OF CANCER
INDIA
DEKKAN
Calcutta
Bombay
ARABIAN SEA
Bay of Bengal
Salween R.
INDO-CHINA
Canton
TAIWAN
HAINAN
PACIFIC OCEAN
WAKE I.
MARIANNE IS.
GUAM
SOUTH CHINA SEA
PHILIPPINE ISLANDS
CAROLINE IS.
MARSHALL IS.
ANDAMAN IS.
CEYLON
Malacca Str.
MALAY PEN.
INDIAN OCEAN
SUMATRA
BORNEO
CELEBES
EQUATOR
EAST INDIES
NEW GUINEA
BISMARCK ARCH.
SOLOMON IS.
C. York
Great Barrier Reef
NEW HEBRIDES
FIJI IS.
NEW CALEDONIA
TROPIC OF CAPRICORN
WESTERN AUSTRALIA PLATEAU
GREAT PLAINS
EAST AUSTRALIAN HIGHLANDS
L. Eyre
Brisbane
Perth
Great Australian Bight
Darling R.
Murray R.
Sydney
Adelaide
Melbourne
Mt. Kosciusko 7328
Bass Str.
TASMANIA
TASMAN SEA
NEW ZEALAND
Mt. Cook 12,349
Mt. Aconcagua
60°
75°
90°
105°
120°
135°
150°
165°
180°
H
J
K
L
M
N
O
P
Q
R
1
2
3
4
5
6
7
15°
30°
45°
60°
0°

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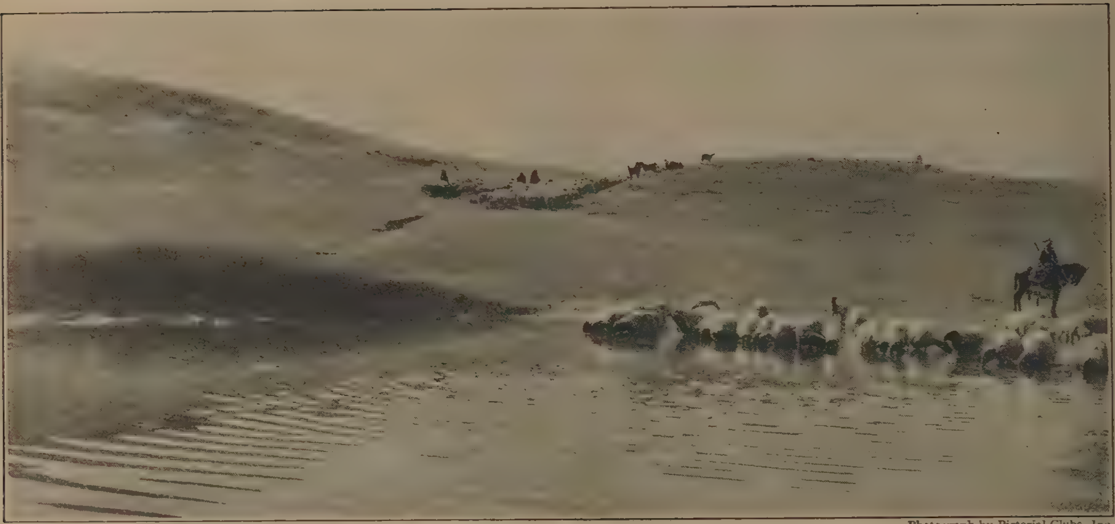


Photograph by Pictorial Clubs, Inc.

Figure 5. A view in the Plateau of Arabia, where so little rain falls that it is hard for people to make a living. A scanty growth of grass and widely scattered pools of water make it possible for small groups of wandering Arabs to live in this dry region by keeping flocks of sheep and goats, and a few camels and horses.

Lands with very few people. Turn to Figure 3 again and find the three largest sections of the Old World where very few people live. You will discover that one of them is in Asia, another in northern Africa, and the third in Australia.

In your study of the Americas you learned that the most thinly populated parts of the New World are chiefly the parts which are the highest, driest, or coldest. Compare the maps on pages 4, 5, and 6–7 and see if you can find similar reasons for the most thinly populated parts of the Old World.

First study the population map again. What one of the thinly populated sections is partly north of the arctic circle? What reason can you give for the few people there?

Turn next to the regional map on pages 6–7. What kind of surface do you find in the great sections of very sparse population? Taken as a whole, are those sections made up chiefly of lowland plains, or more largely of mountains and plateaus?

Now turn to the rainfall map on page 5. How does it help to explain the locations of the very thinly settled sections?

What you have discovered. You have discovered that, except for part of India, the three largest sections of dense population in the Old World are mostly in the north temperate zone; that within them are large stretches of lowland plains; and that they have over 20 inches of rain each year.

Think over what you have learned about the work of the people in regions of the same kind in the Americas, and then make a list of the kinds of work that you think the people of the thickly populated parts of Eurasia do. Keep your list and check it as you learn more about these Old World lands.

You have also discovered that the great sections of the Old World which have very few people are largely high lands or dry lands, and that part of the very thinly settled section of Asia is a very cold land. The regions that have less than 10 inches of rain each year are true deserts. Why is it hard for people to make a living in very dry lands?

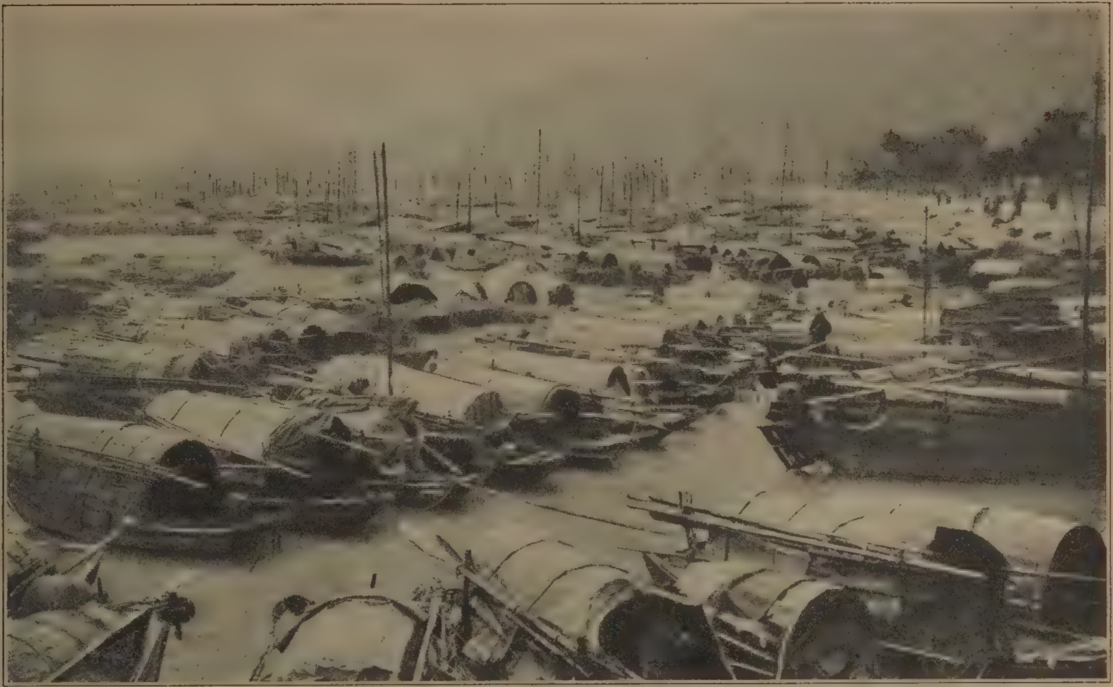


Figure 6. A picture taken in the harbor of Canton, one of the great seaports of China. The eastern part of China is so densely populated that many people live in small boats in the river mouths and harbors along the coast. Some of them make their living by carrying goods from place to place in their house boats.

What have you learned about the life and work of people in the high, rugged mountains and in the deserts of the New World? Make a list of the kinds of work that you think the people do in regions of the same kind in the Old World. Keep this list with your first one, and check it as you learn more about these regions.

Figures 5 and 6 show some interesting contrasts between Arabia, which is one of the very thinly populated parts of Asia, and China, which is one of the most crowded parts. Study both pictures carefully.

Flying over the Old World. Suppose you had an airplane of your own and could fly wherever you pleased. In the column at the left of the map on pages 6–7 you will find suggestions for a trip by airplane in the Old World. As you work out the map studies, try to imagine that you are really flying over the Old World lands.

Making choices. Prove that you are getting acquainted with the Old World by choosing the right ending for each sentence below.

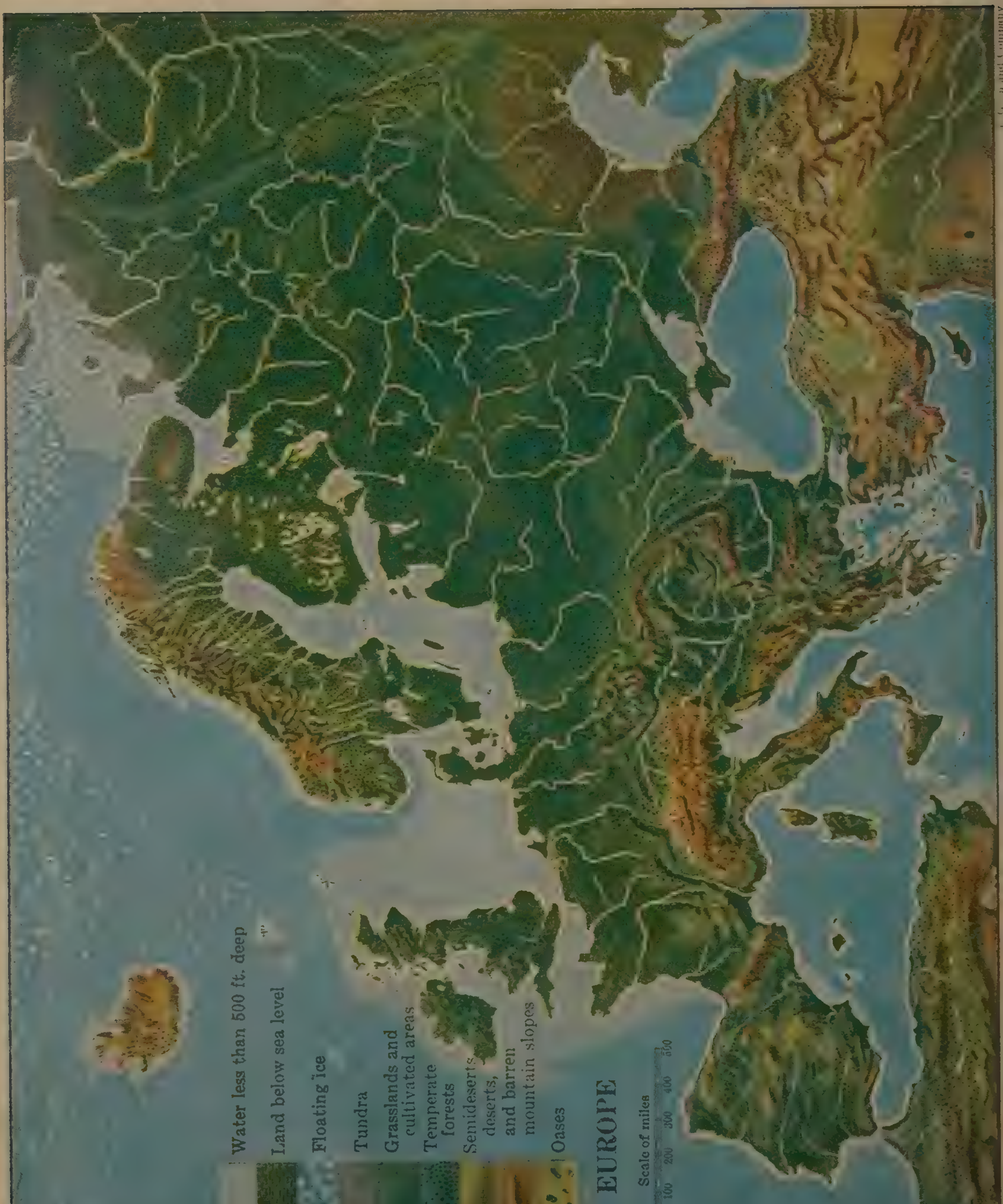
1. Most of Eurasia is in the
north temperate zone. south temperate zone.
torrid zone.

2. The greater part of Africa is in the
north temperate zone. south temperate zone.
torrid zone.

3. The continent of the Old World which is wholly in the Southern Hemisphere is
Asia. Australia. Africa.

4. The most densely populated sections of the Old World are largely regions of
high mountains. plateaus. lowland plains.

5. The yearly rainfall in the three large areas of dense population in Eurasia is
enough for farming. too little for farming.
too much for farming.



Water less than 500 ft. deep
Land below sea level
Floating ice
Tundra
Grasslands and cultivated areas
Temperate forests
Semideserts, deserts, and barren mountain slopes
Oases
EUROPE
Scale of miles
0 100 200 300 400 500
n and Company

II. OUR NEAREST NEIGHBORS IN THE OLD WORLD

Foreword. The part of the Old World that the people of our country visit most often is Europe. One reason is that Europe is nearer to us than any other part of the Old World. Another is that most of the people of the United States are descended from European people. How many countries of Europe can you name without looking at a map?

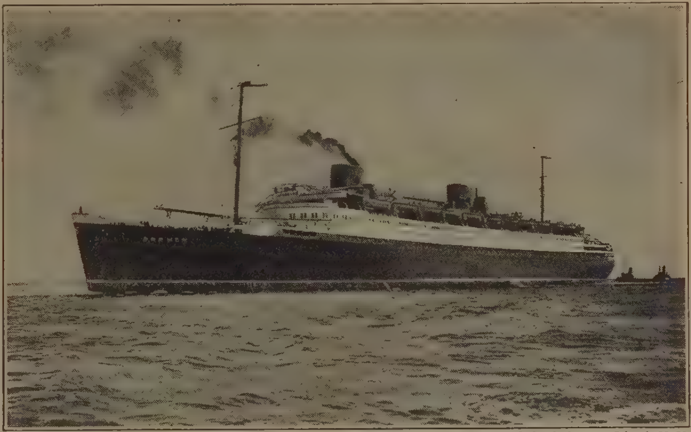
Turn to the map of the world on pages 330–331 and name the European countries that border the Atlantic Ocean. These are our nearest neighbors in Europe. Do you know how we keep in touch with them?

Travel across the ocean. The fastest steamships cross the Atlantic Ocean from New York to French or British ports in about five days. A much larger number of boats make the crossing in from seven to ten days. An airplane has flown from New York to Paris in less than a day and a half, and a dirigible carrying passengers has crossed the Atlantic in less than three days. *See Figures 7 and 10.*

Hundreds of thousands of people travel by boat each year between the countries on the opposite sides of the north Atlantic Ocean. Millions of tons of freight are carried by ships between those countries, and millions of letters pass back and forth. Ideas and news also travel back and forth easily, and they help the people of North America and Europe to know each other better.

Sending messages. Telegraph cables that rest on the sea bottom are used to send messages quickly from one side of the ocean to the other. Radio stations in the United States and others in western Europe keep in touch with one another, and by using the radio it is even possible for people in North America and people in Europe to telephone to one another.

Some comparisons. In the lists on pages 330–331 find the area of Europe and the area of the United States. Comparing their size will show you that Europe is somewhat larger than the United States. But the United States is a single country, while Europe is divided into twenty-nine different countries. What is true, then, of the size of the European countries compared with our country?

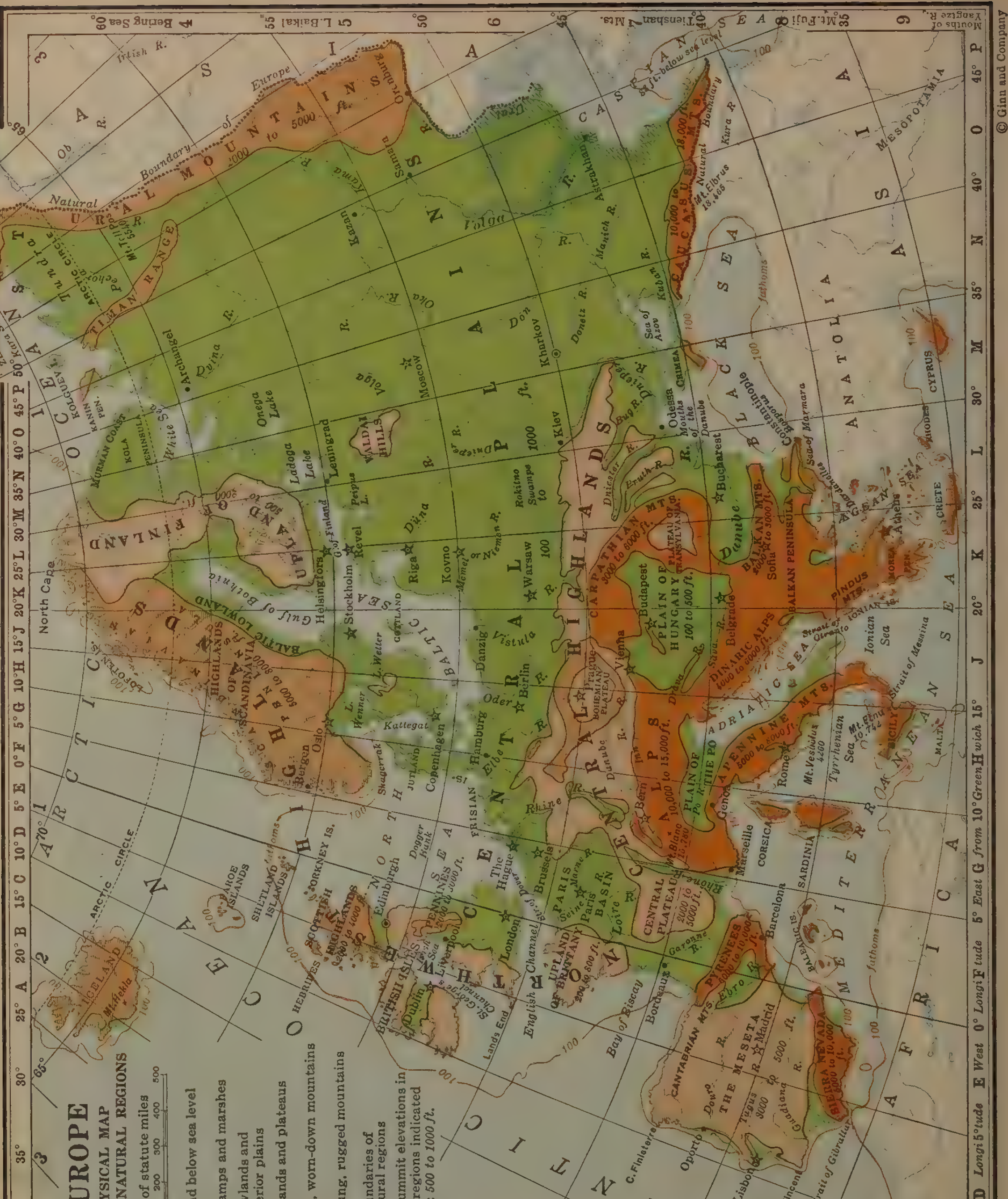


Courtesy of North German Lloyd, N. Y.

Figure 7. One of the great ocean liners, or passenger ships, which cross the Atlantic Ocean from ports of western Europe to New York City in less than five days. This ship carries 2200 passengers.

Turn to pages 330–331 again and trace the parallel of 40° north latitude across the map of the world. Notice that this parallel divides the United States about in halves. What part of Europe does it cross? Now trace the parallel of 60° north latitude and the arctic circle across the map. Do these lines cross the United States? What part of Europe do they cross? What can you say now about the locations of Europe and the United States with reference to the equator? with reference to the north pole?

Turn over to page 14.


EUROPE
PHYSICAL MAP
SHOWING NATURAL REGIONS
Scale of statute miles
0 50 100 200 300 400 500
Land below sea level
Swamps and marshes
Lowlands and interior plains
Uplands and plateaus
Old, worn-down mountains
Young, rugged mountains
Boundaries of natural regions
Average summit elevations in natural regions indicated thus: 500 to 1000 ft.
ARCTIC OCEAN
ATLANTIC OCEAN
NORTH SEA
BALTIC SEA
MEDITERRANEAN SEA
BLACK SEA
CASPIAN SEA
ADRIATIC SEA
AEGEAN SEA
IONIAN SEA
Tyrrhenian Sea
Sea of Azov
Sea of Marmara
White Sea
Bay of Biscay
English Channel
Gulf of Bothnia
G. of Finland
ASIA
AFRICA
ANATOLIA
MESOPOTAMIA
URAL MOUNTAINS 1000 to 5000 ft.
Natural Boundary of Europe
TIMAN RANGE
Tundra
ARCTIC CIRCLE
GREAT PLAIN 1000 ft.
CENTRAL PLAIN 100 ft.
CENTRAL HIGHLANDS
HIGHLANDS OF SCANDINAVIA 2000 to 6000 ft.
BALTIC LOWLAND
FINLAND UPLAND 500 to 2000
VALDAI HILLS
CARPATHIAN MTS. 3000 to 6000 ft.
PLAIN OF HUNGARY 100 to 500 ft.
PLATEAU OF TRANSYLVANIA
BOHEMIAN PLATEAU
ALPS 10,000 to 15,000 ft.
PLAIN OF THE PO
APENNINE MTS. 5000 to 6000 ft.
DINARIC ALPS 4000 to 6000 ft.
BALKAN MTS. 4000 to 5000 ft.
BALKAN PENINSULA
PINDUS MTS.
CAUCASUS MTS. 10,000 to 18,000 ft.
Mt. Elbrus 18,465
PYRENEES 5000 to 10,000 ft.
CANTABRIAN MTS.
THE MESETA 3000 ft.
SIERRA NEVADA 6000 to 10,000 ft.
CENTRAL PLATEAU 2000 to 5000 ft.
PARIS BASIN
UPLAND OF BRITTANY 300 to 800 ft.
SCOTTISH HIGHLANDS 2000 to 4000 ft.
PENNINES 2000 to 3000 ft.
BRITISH ISLES
ICELAND
Mt. Hekla
FAROE ISLANDS
SHETLAND ISLANDS
ORKNEY IS.
HEBRIDES
LOFOTEN IS.
North Cape
KOLGUEV I.
KANIN PEN.
KOLA PENINSULA
MURMAN COAST
NOVAYA ZEMLYA
GOTLAND
JUTLAND
FRISIAN IS.
Dogger Bank
Skagerrak
Kattegat
CORSICA
SARDINIA
SICILY
MALTA
BALEARIC IS.
CRETE
CYPRUS
RHODES
CRIMEA
MOREA PEN.
Mt. Blanc 15,780
Mt. Vesuvius 4260
Mt. Etna 10,758
Mt. Telpos
Rokitno Swamps
Dardanelles
Bosporus
Strait of Gibraltar
Strait of Otranto
Strait of Messina
Lands End
C. Finisterre
C. St. Vincent
Straits of Dover
St. George's Channel
Irish Sea
Volga R.
Kama R.
Ural R.
Dvina R.
Pechora R.
Oka R.
Don R.
Donetz R.
Manich R.
Kuban R.
Kura R.
Dnieper R.
Bug R.
Dniester R.
Pruth R.
Danube
Mouths of the Danube
Sava R.
Drava
Vistula
Oder
Elbe
Rhine
Niemen R.
Düna
Rhone R.
Seine R.
Marne R.
Loire R.
Garonne R.
Ebro R.
Douro R.
Tagus R.
Guadiana R.
Po R.
Inn
L. Wenner
L. Wetter
Ladoga Lake
Onega Lake
Peipus L.
Ob R.
Irtish R.
Moscow
Leningrad
Archangel
Kazan
Samara
Orenburg
Astrakhan
Kharkov
Kiev
Odessa
Constantinople
Warsaw
Kovno
Memel
Riga
Revel
Helsingfors
Stockholm
Oslo
Bergen
Copenhagen
Hamburg
Danzig
Berlin
Prague
Vienna
Budapest
Bucharest
Belgrade
Sofia
Athens
Rome
Genoa
Marseille
Bern
Brussels
The Hague
Paris
London
Liverpool
Edinburgh
Dublin
Bordeaux
Barcelona
Madrid
Lisbon
Oporto
100 fathoms
ft. below sea level
Longitude East from Greenwich
Longitude West
Mouths of Yangtze R.
Mt. Fuji
Tienshan Mts.
L. Baikal
Bering Sea
James Bay
Source of Mississippi R.
Cape Cod
C. Hatteras
Delta of Mississippi R.

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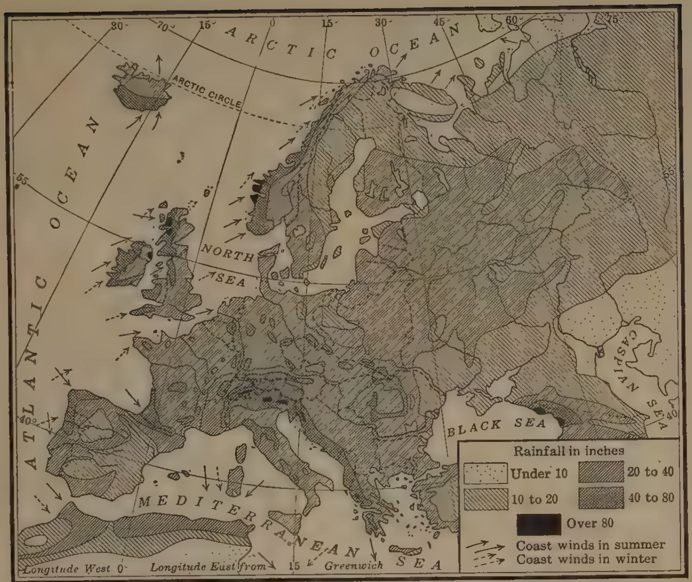
ARCTIC OCEAN
ARCTIC CIRCLE
ATLANTIC OCEAN
NORTH SEA
BLACK SEA
CASPIAN SEA
MEDITERRANEAN SEA
Rainfall in inches
Under 10
10 to 20
20 to 40
40 to 80
Over 80
Coast winds in summer
Coast winds in winter
Longitude West 0 Longitude East from 15 Greenwich

Figure 8. Distribution of rainfall in Europe.

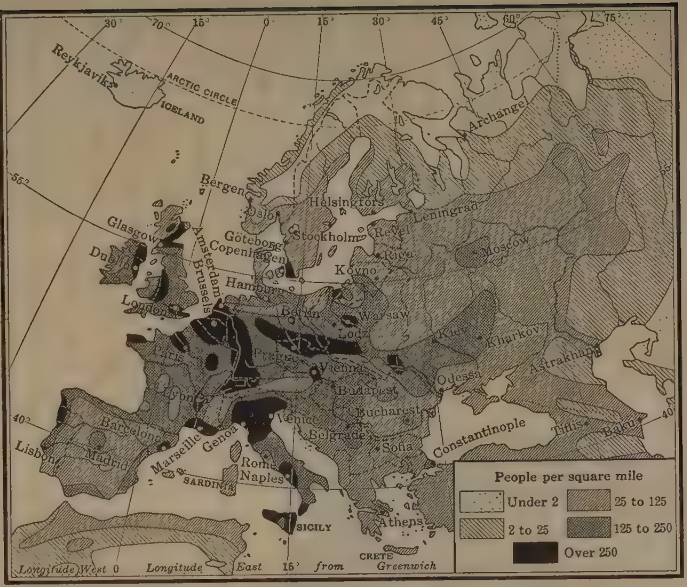
Reykjavik
ARCTIC CIRCLE
ICELAND
Archangel
Bergen
Oslo
Helsingfors
Leningrad
Glasgow
Dublin
Göteborg
Stockholm
Copenhagen
Reval
Riga
Moscow
Amsterdam
Brussels
Kovno
London
Hamburg
Berlin
Warsaw
Lodz
Kiev
Kharkov
Paris
Prague
Vienna
Odessa
Astrakhan
Budapest
Lyon
Bucharest
Barcelona
Venice
Belgrade
Marseille
Genoa
Sofia
Constantinople
Tiflis
Baku
Lisbon
Madrid
Rome
Naples
SARDINIA
SICILY
Athens
CRETE
People per square mile
Under 2
2 to 25
25 to 125
125 to 250
Over 250
Longitude West 0 Longitude East 16 from Greenwich

Figure 9. Distribution of people in Europe.

MAP STUDIES

1. In what part of Europe do you find young, rugged mountains? 2. Name the two mountain regions which have the highest summits. 3. How does Mont Blanc (*G6*) in the Alps compare in height with Mount Elbrus (*O7*) in the Caucasus? 4. What mountains in the Americas are of the same kind as those in southern Europe? 5. In what ways do you think the people of the young, rugged mountains in Europe probably make their living?

6. Find the Central Plains, the Paris Basin, the Plain of the Po, and the Plain of Hungary. 7. Compare this map with Figure 8 and give two reasons why these plains are well suited to farming.

8. Find the Northwest Highlands and the Central Highlands. 9. What large region of old, worn-down mountains forms part of the Northwest Highlands? 10. In the Central Highlands of Europe the landscape is much like that in parts of the Appalachian Highlands of North America. Can you explain why?

11. Notice how irregular the western coast line of the Scandinavian Peninsula is. This coast is broken by long, narrow fiords which will remind you of southeastern Alaska and southern Chile.

12. What sea separates the Scandinavian Peninsula from the British Isles? 13. What sea extends far into the Central Plains of Europe? 14. What large sea borders Europe on the south? 15. What do you find on Figure 8 to show that northwestern Europe lies in the path of the rain-giving westerly winds?

16. Use Figure 9 to compare the density of population in central and southern Europe with the density in northern Europe. What reasons can you give for the difference? 17. Compare the density of population in the western half of Europe with that in the eastern half, and give reasons for the difference.

Photograph by U. S. Signal Corps from Wide World Photos

Figure 10. The *Graf Zeppelin*. This dirigible has made several flights across the Atlantic Ocean, carrying passengers. In August, 1929, it made a trip around the world in about 21 days.

Since Europe lies so much farther north than the United States, you might expect its climate to be much colder. This, however, is not true, except in the northern sections of Europe which are far inland. Do you know why? If you cannot tell the reason now, be on the lookout for it as you learn more about the European countries.

The natural regions of Europe. When you were studying the lands of the Western Hemisphere, you found that the way people live and work depends largely on the kind of region in which they make their home. In order to understand how the people live in different parts of Europe, you need to get acquainted with the natural regions of the continent. To do this, work out the map studies on page 13.

Lands held by European nations. You will remember that the United States has several possessions in different parts of the world, and that we found parts of the British Empire in North America, South America, and the West Indies. We also found French and Dutch possessions in the Western Hemisphere. Do you remember where they are?

We shall find that the British, French, Belgians, Dutch, Italians, and a few other nations of Europe hold lands in distant parts of the Eastern Hemisphere. Many, but not all, of these possessions are called colonies.

Homelands and possessions. The people of the homelands in Europe and those of the distant possessions are keenly interested in each other. One reason for this is that many people from the home countries go out to the possessions to make new homes, or to work for a time as representatives of business companies or as government officials. Naturally enough, their relatives in Europe are interested in the lands to which they have gone, and they, in turn, seldom lose interest in the home country. Another reason is that trade between the home countries and many of the possessions is very valuable, and keeps them in close touch with one another.

The distant possessions mean so much to the people of the homelands in Europe that we shall study the European countries and their possessions together, just as we studied the United States and its possessions. We shall begin our study with the British Empire, which is made up of the British Isles, in Europe, and all the British lands in distant parts of the world.

Something to do. On an outline map of the world color the British Isles in red. Then color the British possessions in the Western Hemisphere in pink. If you cannot remember all of them, the map on pages 42–43 will help you. Keep your map so that you may color the British possessions in the Eastern Hemisphere as you study them.

Perhaps a group of pupils in the class can make a large wall map to show the lands of the British Empire.

THE BRITISH EMPIRE

I. A COMMONWEALTH OF NATIONS

Foreword. In the early days of exploration, before anyone knew how many continents there were on the earth, the British sailors were among the most daring men who went to sea. They visited many distant parts of the world, and when they returned to their homes in the British Isles they told of the far-away lands and the strange people they had seen.

Later the British sent out colonists to settle in some of these distant lands, and formed business companies to carry on trade with others. Through settlement and trade they gradually gained possession of many different parts of the earth, until today they control more land than any other nation. Their vast empire includes lands in every continent, and its area of more than thirteen million square miles is nearly one fourth of the entire land area of the earth.

Contrasts within the empire. The various parts of the British Empire differ greatly from one another. In some parts the winters are long and cold, and in others the weather is always warm. Other parts are desert regions, and still others are lands where the rainfall is so heavy that there is danger from floods.

Map work. Before you read further about the British Empire, turn to page 43 and work out the map studies there.

The people of the empire. In the lands belonging to the British Empire there are about four hundred and fifty million people, which is nearly one fourth of all the people on the earth. Of this great number, sixty-five million are white people and three hundred and eighty-five million are people of the darker-skinned races. Some of the groups of people within the empire are among the most advanced nations of the world, while others are among the most backward nations.

The people who live in the British Isles are the English-speaking people of Europe, and most of the white people in all parts of the British Empire use the English language. In many of the colonies there are native people who use their own language, but more and more of them are learning to speak English because they need it in order to trade with the white people.

World-wide interests of the British people. All the large firms carrying on business in distant parts of the British Empire have offices in one or another of the great cities of the British Isles, and many of the business firms of the home country have branch offices in the dominions and colonies. Thus the British people have business interests in all parts of the world.

On any day of the year, at any one of the large seaports of the British Isles, you might see ships arriving from other parts of the empire or sailing off to those distant lands. If you should visit the wharves frequently, you would discover that people and goods are always traveling back and forth between the home country and the colonial lands.

In almost every British family there is someone who has gone to live in one of the distant parts of the empire, or someone who has joined the navy or is an officer or a seaman on some passenger ship or freighter which crosses and recrosses the oceans.

The divisions of the empire. When you were studying North America, you learned that Canada and Newfoundland are dominions of the British Empire. How many other dominions did you discover in studying the map on pages 42–43? The dominions are almost like independent countries, for the people govern themselves. Each of the colonies has a governor sent out from the home country, but the people themselves also have a share in the government.

Besides the dominions and colonies, there are parts of the empire called protectorates and dependencies. They are lands where the British protect the native people and help them with their government.

A commonwealth of nations. The British people often speak of their empire as the British Commonwealth of Nations. The word *commonwealth* comes from the old English words *common weal*, which mean "common good," or "for the good of all."

Although the British Empire is made up of widely scattered lands and many different groups of people, all the members of this great family of nations help each other through friendship and trade. Helping each other works for the good of all, and thus the British Empire is a real commonwealth of nations.

Where are these ships going? A shipowner in the British Isles is sending out five ships to distant parts of the empire. The place where each ship is going is described below. Write the names of the places in a list, in the order in which they are described. When you have finished, check your list by the map on pages 42–43 to make sure it is correct.

1. To a large British dominion in North America.
2. To the largest of the British lands in Asia.
3. To a British dominion in Africa.
4. To a British dominion which occupies a whole continent.
5. To the dominion farthest southeast from the British Isles.

II. THE BRITISH ISLES

Foreword. The British Isles are made up of the two large islands known as Great Britain and Ireland, and the many small islands close by. Great Britain includes England, Scotland, and Wales. Ireland has two political divisions: Northern Ireland and the Irish Free State. Find these five divisions of the British Isles on the map on pages 22–23.

Great Britain and Northern Ireland are closely united in government, but the Irish Free State has an independent government, somewhat like that of the self-governing dominions.

The British Isles make up less than 1 per cent of all the lands of the empire, and yet they have more than 10 per cent of all the people, and they are one of the most densely populated parts of Europe. Do you know why it is that so many people can make a living in these islands? Watch for reasons as you study this chapter.

1. THE HOMELAND OF THE BRITISH

When you were studying the United States, you learned that the people of New England began very early to use the sea for fishing and trading, and that later on trading helped them to develop manufacturing. The story of the British people is somewhat like that of the New Englanders. For hundreds of years they have been using the sea for fishing and trading, and today they carry on more dollars' worth of foreign commerce, or trade with other countries, than any other nation in the world. Our own country ranks second in foreign commerce.

During the last one hundred and fifty years the British people have also become a great manufacturing nation, and manufactured goods are by far the most valuable products that they sell to the people of other countries.

As you study this section, find reasons why the British have become leaders among the commercial, or trading, nations of the world, and also among the industrial, or manufacturing, nations.

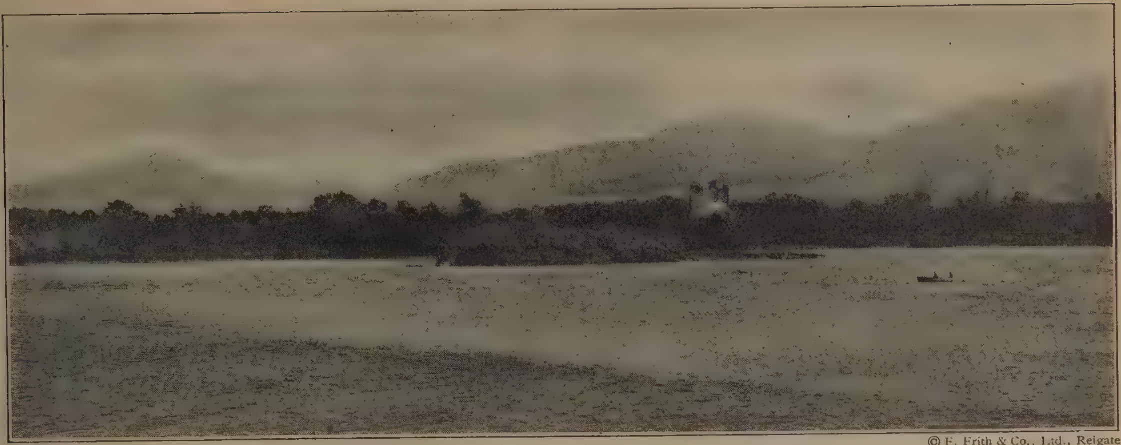

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Figure 11. A view among the beautiful Lakes of Killarney in southwestern Ireland. The castle shown in the picture was built over 300 years ago. Many of the upland regions of the British Isles are as hilly and mountainous as this. Do you think they make especially good farm lands? Give a reason for your answer.

Map study. Begin your study of the British Isles by using the map on pages 22–23 to answer the following questions:

1. Is the coast line of the British Isles smooth and regular or crooked and irregular? 2. What does this suggest about the number of good harbors for ships? 3. What bodies of water surround the British Isles? 4. What narrow bodies of water separate Great Britain from France?

5. What range of old, worn-down mountains do you find in England? 6. In what part of England are these mountains? 7. How should you describe the rest of England? 8. Is Wales chiefly an upland or a lowland country?

9. In what part of Scotland do you expect to find the most people? Why? 10. Look at Figure 9 on page 13 and see if your answer to the first part of question 9 was correct. 11. How does the central part of Ireland differ from the northern and southern parts? 12. In what country is the central plain of Ireland?

The higher lands of the British Isles. You have discovered from the map that much of the land in the British Isles is hilly or mountainous. The mountains are old and worn down, and the uplands are lands with rounded hills and gently sloping valleys. In northern England and in Scotland and Ireland there are lake districts much like our own beautiful lake districts in New England and in the Adirondack Mountains. *See Figure 11.*

The continental glacier and its work. Do you remember about the great ice sheets, or continental glaciers, which long ago covered the northern part of North America? At about the same time that these ice sheets formed in North America a great ice sheet formed in the Scandinavian Peninsula of Europe and spread over the northern part of that continent. It brought about changes in Europe similar to those caused by the ice sheets in North America. Figure 12 shows how much of Europe was covered by the continental ice sheet.

As the great mass of glacier ice moved slowly over the highlands of Scotland and the Pennine Range of England, it wore down the higher parts and rounded the mountain peaks. When the ice finally melted away, it left loose rock material known as *glacial drift* spread over the land which it had covered. Fortunately, the glacial drift left in the British Isles is not so coarse and bowldery as that in New England, and therefore it is not so great a handicap to farming.

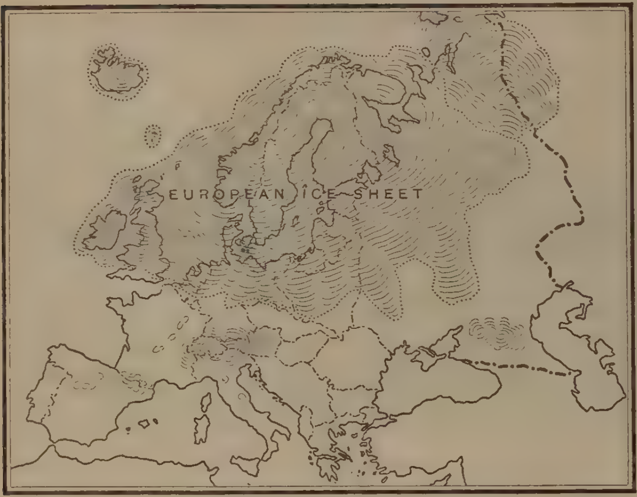

Figure 12. A map showing how much of Europe was covered by the continental ice sheet of long ago. Notice that as the ice spread southward from the Scandinavian Peninsula it covered all parts of the British Isles except the southernmost part of England.

The lowlands of the British Isles. In studying the map you discovered that there are three important lowland regions in the British Isles. The largest one is in England, and within it are the best farm lands of that country, and also many of the largest industrial, or manufacturing, centers. In the farming sections you will see grainfields and pastures bordered by beautiful hawthorn hedges instead of by wooden fences or stone walls. *See Figure 13.*

The lowland of Scotland forms a narrow belt between the Scottish Highlands on the north and the uplands of southern Scotland on the south. It is a beautiful region of green fields which are used for pastures and mixed farming, and scattered through it are many little villages and a few large cities. It is in this lowland region that most of the people of Scotland live. Explain why.

The lowland of Ireland extends from coast to coast across the central part of the island. Much of the land in this region is so low that it is swampy, but it makes good pasture land.

In all parts of Ireland the summers are cool, the winters mild, and the rainfall abundant. For this reason the grass stays green throughout most of the year. Ireland is often called the "Emerald Isle." Can you explain why?

Mineral wealth. Turn to the map on pages 22–23 and find the places where coal is mined in England, Scotland, and Wales. Notice that there are coal mines in the lowlands as well as in the uplands. The fact that there is much coal in Great Britain will help you to understand why manufacturing is so important there. Study the map again and name a metal ore that is mined in several different parts of iron England. What kind of manufacturing, then, do you expect to find in some of the English industrial centers?

The "drowned" coast line. You discovered in studying the map that the coast line of the British Isles is very irregular. That is because long, long ago the land sank and the sea water came into the lower ends of the river valleys. For this reason we say that the river mouths have been "drowned." We call a drowned river mouth an *estuary*.

The estuaries provide the British Isles with many large, deep harbors for ships. That is one reason why the British have always been seafaring people; that is, people who make much use of the sea. *See Figure 14.*

The shallow bordering seas. Turn to the map on page 12 and find the brown line in the water around the British Isles. Notice that it is marked *100 fathoms*. Along that line the water is 100 fathoms, or 600 feet, deep.

During your study of North America you learned that the 100-fathom line marks the outer edge of the continental shelf, or the part of the land which lies under water much shallower than the deep oceans. Turn to the map on page 12 again, and you will see that the British Isles are surrounded by shallow seas.

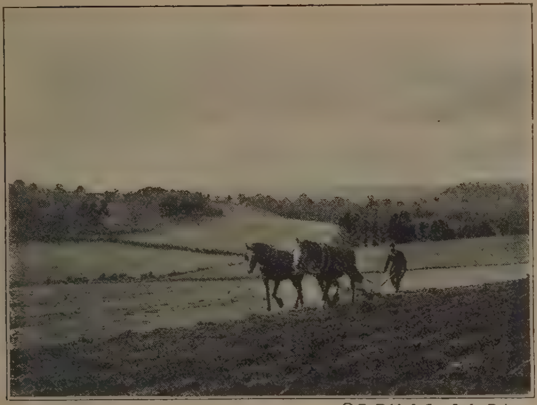

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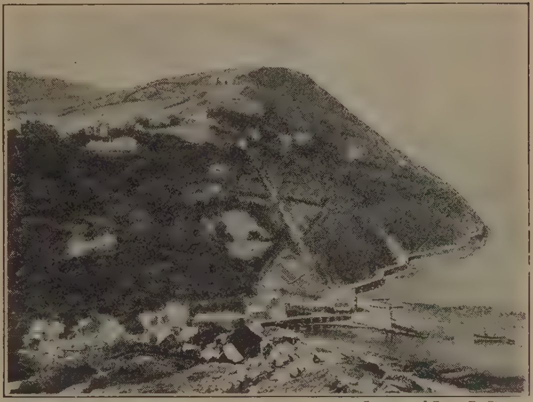
Figure 13. Plowing in the southern part of the plain of England. Contrast the surface of the land here with that shown in Figure 11. Where in Scotland and Ireland may you expect to find land as level as this?



Courtesy of Grace R. Stevens

Figure 14. Two villages on the southwestern coast of England. One village is on the top of a sea cliff, and the other is at the foot. How do you think some of the people of the lower village make their living?

Famous fishing grounds. Do you remember the famous fishing grounds called "banks" which are found on the continental shelf bordering northeastern North America? The North Sea and the other shallow seas bordering northwestern Europe are also rich fishing grounds, because they too are feeding places for millions of fish. That is why fishing has always been an important kind of work along the shores of the British Isles. *See Figure 15.*

A climate problem. You have already discovered that the British Isles are in the same latitude as Labrador, and you know that Labrador is so cold that very few people live there. The map on page 340 will help you to understand why northwestern Europe is warmer than the eastern part of North America in the same latitude. What ocean current moves northeastward across the Atlantic Ocean toward northwestern Europe? Is it a cold current or a warm current?

How oceans affect climate. Wherever you travel you will find that ocean waters have much to do with the climates of the bordering lands. In the first place, they make coast lands cooler in summer and warmer in winter than interior lands in the same latitude.

The next point for you to remember is that there are warm currents and cold currents in different parts of the oceans. The warm currents make the air just above them warm, while the cold currents make the overlying air cold. When air warmed by an ocean current is blown over a land surface, the temperature of the air over that land becomes warmer. What happens when air cooled by an ocean current is blown over a land surface?

The oceans also have much to do with the rainfall of the bordering lands. Winds that blow from the oceans bring rain-bearing clouds to the lands, and therefore all coast lands where winds blow steadily or frequently from the sea have abundant rainfall throughout the year.

Temperatures in the British Isles. The reason the British Isles are so much warmer than Labrador is that they lie in the path of the westerly winds of the Northern Hemisphere. These winds, blowing across the north Atlantic Ocean, carry air warmed by the Gulf Stream and the Gulf Stream Drift to the British Isles and other parts of northwestern Europe. Thus this part of Europe has a much warmer climate than the part of

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Figure 15. Fishing boats in the harbor of one of the fishing ports of England. Many of the fishermen use sailing boats and many go out in steam trawlers.

North America on the opposite side of the Atlantic Ocean in the same latitude.

The British Isles are seldom very cold in winter or very hot in summer. That is because the islands are not large, and therefore all parts of them are affected by the temperatures of the surrounding waters.

Since in the winter the waters surrounding the islands do not cool off so fast as the land, the air that blows inland from the sea keeps the winter weather from being very cold. For this reason the temperature seldom falls to the freezing point (32° Fahrenheit) in the lowlands of these islands.

During the summer the air over the land becomes warm, for the summer days are long in the latitude of the British Isles. But the surrounding waters do not warm up so fast as the land, and the cool breezes which blow inland from the sea keep the summer temperatures from being uncomfortable.

Rainfall in the British Isles. The westerly winds bring large quantities of moisture to the British Isles, giving them a rainy climate. The western sides of the islands and the mountainous parts have from 70 to 80 inches of rain a year, and the lowlands have from 25 to 40 inches in most sections. This, as you know, is plenty of rain for agriculture. The driest section is in the lowland northeast of London. Can you explain why?

Some things to explain. Explain what is meant by each of the following words and phrases:

continental glacier
estuary
fathom
continental shelf
seafaring people
foreign commerce
commercial nation
industrial city

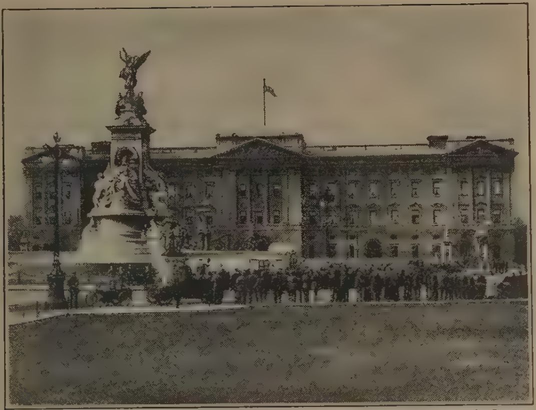
Giving reasons. Complete each sentence below by giving reasons for the fact which it states:

1. Many parts of the British Isles are not well suited to farming because ________________.
2. There are no sharp peaks in the mountains of Great Britain because ________________.
3. The British Isles have many good harbors because ________________________________.
4. The British Isles have a mild, rainy climate because ________________________________.
5. They are much warmer than Labrador because ________________________________.

Something to prove. If you can answer the following questions correctly, you will prove that you already know some of the reasons why the British people are one of the greatest commercial and industrial nations of the world.

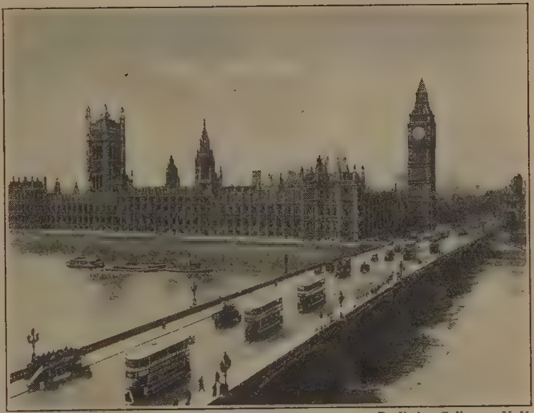
1. Why is it easy for people who live on islands to carry on trade with people in other parts of the world?
2. How does a "drowned" coast line help people to make use of the sea?
3. How does an abundance of coal help a nation to carry on manufacturing?
4. For what important kind of manufacturing is iron ore the principal raw material?
5. Why is a densely populated country better prepared to carry on manufacturing than a sparsely populated country?
6. How does foreign commerce help a country to increase its manufacturing?

Special credit work. Find out how much rain falls each year where you live, and tell how it compares with the rainfall in the British Isles.



Courtesy of Grace R. Stevens

Figure 16. Buckingham Palace, the home of the British king. The British recognize the king as the head of the government, but the real power lies in the hands of the prime minister and other officers of the people.



By Ewing Galloway, N. Y.

Figure 17. The Houses of Parliament, seen from across the Thames. The British Parliament is somewhat like our Congress, and is made up of members from England, Scotland, Wales, and Northern Ireland.

2. THE CAPITAL OF THE BRITISH EMPIRE

Every visitor to Great Britain wishes to see London, just as every visitor to our country wishes to see New York City. New York, you will remember, is the largest city in the world. London is the next largest. Within the city limits live over four and a half million people, and crowded closely around it live three and a quarter million more.

Find London on the map on pages 22–23 (*G5*). In what part of England is it located? On what river? Can you suggest any reasons why a great city should have grown up at that place?

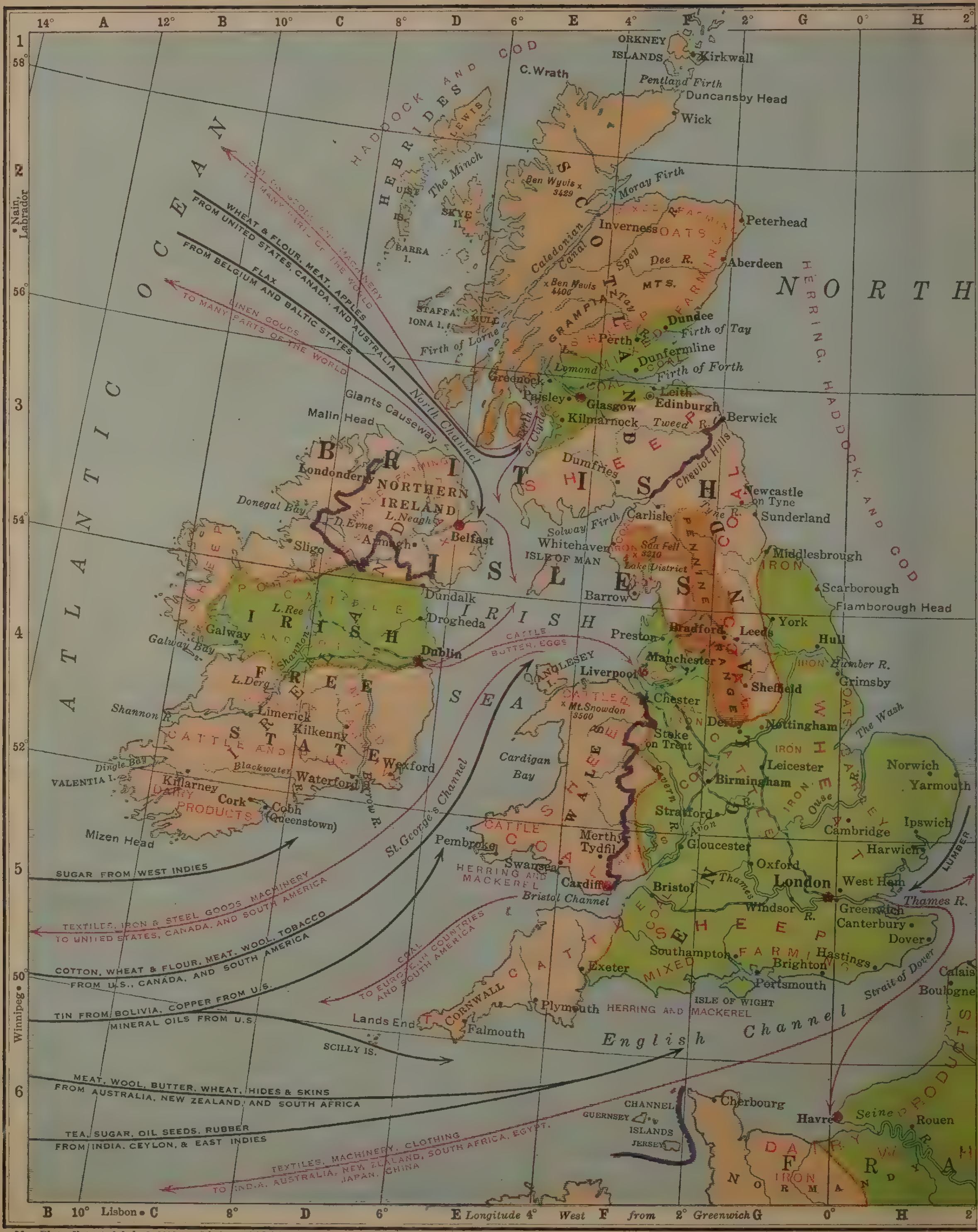
A great center of government. London is the capital of the United Kingdom of Great Britain and Northern Ireland. Figure 16 shows the palace where the king lives, and Figure 17 shows the great building where the British Parliament meets to carry on the government of the kingdom.

London is the capital of the British Empire also. In this great city are offices where matters concerning the self-governing dominions are cared for, and others where men in charge of certain affairs of the colonies and dependencies do their work.

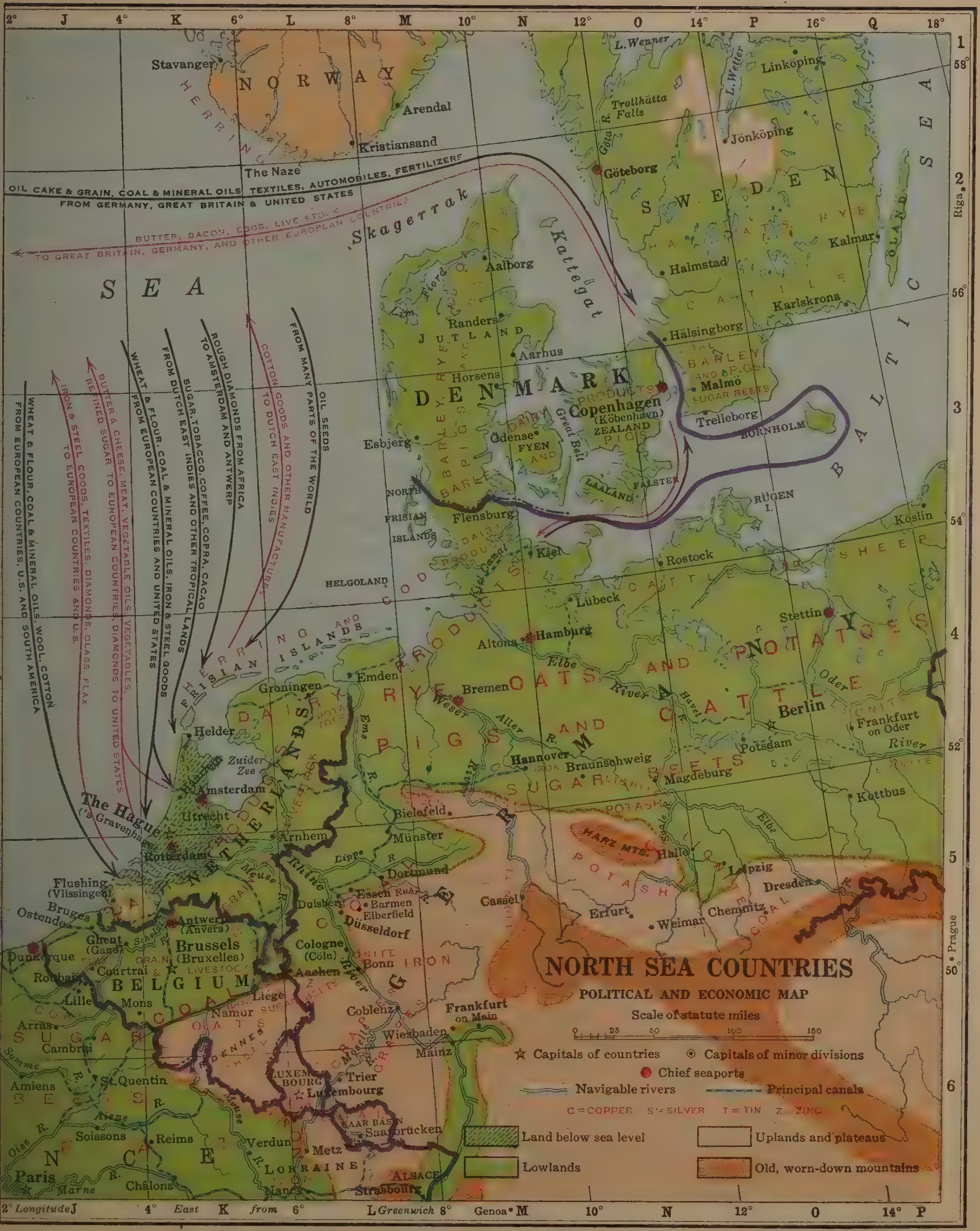
A busy, crowded city. The traffic in London reminds us of New York and the other large cities of our country. The sidewalks are crowded with people, and the streets are filled with taxicabs, busses, and private automobiles. Beneath the ground there is a network of subways for electric trains. Thousands of people use the subways to travel back and forth between their homes and their places of work.

The shops and stores in London are much like those in our own large cities. The business buildings are large, and many are ten or twelve stories high, but there are no huge skyscrapers such as we have in the United States. *See Figure 18.*

Old London. Figure 19 shows that London spreads out on both sides of the river Thames. In the midst of the great city of today is Old London, on the north bank of the river near London Bridge. (See 11 on Figure 19.) Here the first settlement was made, more than two thousand years ago. The map on pages 22–23 will help you to understand why a town grew up at this place. Notice that the river Thames flows from west to east across southern England.


ATLANTIC OCEAN
NORTH
BRITISH ISLES
SCOTLAND
NORTHERN IRELAND
IRISH FREE STATE
ENGLAND
WALES
IRISH SEA
English Channel
ORKNEY ISLANDS
Kirkwall
Pentland Firth
Duncansby Head
Wick
C. Wrath
HEBRIDES
LEWIS
The Minch
UIST IS.
SKYE I.
BARRA I.
STAFFA I.
IONA I.
MULL
Ben Wyvis 3429
Moray Firth
Inverness
Caledonian Canal
Spey
Dee R.
Ben Nevis 4406
GRAMPIAN MTS.
Tay R.
Peterhead
Aberdeen
OATS
Dundee
Firth of Tay
Perth
Dunfermline
Firth of Forth
Firth of Lorne
Lomond
Greenock
Paisley
Glasgow
Leith
Edinburgh
Kilmarnock
Tweed R.
Berwick
Firth of Clyde
North Channel
Giants Causeway
Malin Head
Londonderry
Donegal Bay
L. Erne
L. Neagh
Armagh
Belfast
Sligo
Dundalk
Drogheda
L. Ree
Galway
Galway Bay
Shannon
Dublin
L. Derg
Shannon R.
Limerick
Kilkenny
Wexford
Waterford
Blackwater
Barrow R.
Dingle Bay
VALENTIA I.
Killarney
Cork
Cobh (Queenstown)
Mizen Head
DAIRY PRODUCTS
CATTLE AND
CATTLE
Dumfries
Solway Firth
Carlisle
Cheviot Hills
Tyne R.
Newcastle on Tyne
Sunderland
Whitehaven
ISLE OF MAN
Sca Fell 3210
Lake District
PENNINE
Middlesbrough
IRON
COAL
Scarborough
Flamborough Head
Barrow
York
Preston
Bradford
Leeds
Hull
Humber R.
Grimsby
Manchester
Liverpool
ANGLESEY I.
Sheffield
Chester
Mt. Snowdon 3560
Derby
Nottingham
Stoke on Trent
Leicester
The Wash
Norwich
Yarmouth
Birmingham
Cardigan Bay
Severn R.
Ouse
Avon
Stratford
Cambridge
Ipswich
Harwich
WHEAT
OATS
Pembroke
Merthyr Tydfil
Gloucester
Oxford
Swansea
Cardiff
Bristol
Thames R.
London
West Ham
Windsor
Greenwich
Canterbury
Dover
Bristol Channel
HERRING AND MACKEREL
St. George's Channel
SHEEP
MIXED FARMING
Southampton
Hastings
Brighton
Portsmouth
ISLE OF WIGHT
Strait of Dover
Calais
Boulogne
Exeter
CORNWALL
Plymouth
Falmouth
Lands End
SCILLY IS.
CHANNEL ISLANDS
GUERNSEY
JERSEY
Cherbourg
Havre
Seine R.
Rouen
NORMANDY
DAIRY PRODUCTS
F R A
LUMBER
HADDOCK AND COD
HERRING, HADDOCK, AND COD
WHEAT & FLOUR, MEAT, APPLES FROM UNITED STATES, CANADA, AND AUSTRALIA
FLAX FROM BELGIUM AND BALTIC STATES
COAL TO SCOTLAND, MACHINERY TO MANY PARTS OF THE WORLD
LINEN GOODS TO MANY PARTS OF THE WORLD
CATTLE BUTTER, EGGS
SUGAR FROM WEST INDIES
TEXTILES, IRON & STEEL GOODS, MACHINERY TO UNITED STATES, CANADA, AND SOUTH AMERICA
COTTON, WHEAT & FLOUR, MEAT, WOOL, TOBACCO FROM U.S., CANADA, AND SOUTH AMERICA
COAL TO EUROPEAN COUNTRIES AND SOUTH AMERICA
TIN FROM BOLIVIA, COPPER FROM U.S.
MINERAL OILS FROM U.S.
MEAT, WOOL, BUTTER, WHEAT, HIDES & SKINS FROM AUSTRALIA, NEW ZEALAND, AND SOUTH AFRICA
TEA, SUGAR, OIL SEEDS, RUBBER FROM INDIA, CEYLON, & EAST INDIES
TEXTILES, MACHINERY, CLOTHING TO INDIA, AUSTRALIA, NEW ZEALAND, SOUTH AFRICA, EGYPT, JAPAN, CHINA
Nain, Labrador
Winnipeg
Lisbon
14° A 12° B 10° C 8° D 6° E 4° F 2° G 0° H 2°
58° 56° 54° 52° 50°
1 2 3 4 5 6
B 10° Lisbon C 8° D 6° E Longitude 4° West F from 2° Greenwich G 0° H 2°

Map Plate, Patented July 5, 1921 · Method of Making Maps, Patented July 5, 1921



NORTH SEA COUNTRIES

POLITICAL AND ECONOMIC MAP

Scale of statute miles
0 25 50 100 150
☆ Capitals of countries
⊙ Capitals of minor divisions
● Chief seaports
Navigable rivers
Principal canals
C = COPPER S = SILVER T = TIN Z = ZINC
▨ Land below sea level
🟩 Lowlands
☐ Uplands and plateaus
🟧 Old, worn-down mountains
OIL CAKE & GRAIN, COAL & MINERAL OILS, TEXTILES, AUTOMOBILES, FERTILIZERS FROM GERMANY, GREAT BRITAIN & UNITED STATES
BUTTER, BACON, EGGS, LIVE STOCK TO GREAT BRITAIN, GERMANY, AND OTHER EUROPEAN COUNTRIES
WHEAT & FLOUR, COAL & MINERAL OILS, WOOL, COTTON FROM EUROPEAN COUNTRIES, U.S. AND SOUTH AMERICA
IRON & STEEL GOODS, TEXTILES, DIAMONDS, GLASS, FLAX TO EUROPEAN COUNTRIES AND U.S.
BUTTER & CHEESE, MEAT, VEGETABLE OILS, VEGETABLES, REFINED SUGAR TO EUROPEAN COUNTRIES, DIAMONDS TO UNITED STATES
WHEAT & FLOUR, COAL & MINERAL OILS, IRON & STEEL GOODS FROM EUROPEAN COUNTRIES AND UNITED STATES
SUGAR, TOBACCO, COFFEE, COPRA, CACAO FROM DUTCH EAST INDIES AND OTHER TROPICAL LANDS
ROUGH DIAMONDS FROM AFRICA TO AMSTERDAM AND ANTWERP
COTTON GOODS AND OTHER MANUFACTURES TO DUTCH EAST INDIES
OIL SEEDS FROM MANY PARTS OF THE WORLD
NORWAY
SWEDEN
DENMARK
NETHERLANDS
BELGIUM
GERMANY
FRANCE
LUXEMBOURG
SEA
BALTIC SEA
Skagerrak
Kattegat
Stavanger
Arendal
Kristiansand
The Naze
HERRING
L. Wenner
L. Wetter
Linköping
Trollhätta Falls
Göta R.
Göteborg
Jönköping
Halmstad
Kalmar
Karlskrona
ÖLAND
Riga
Hälsingborg
Malmo
Trelleborg
BORNHOLM
BARLEY AND PIGS
SUGAR BEETS
RYE OATS
CATTLE
Lim Fiord
Aalborg
Randers
JUTLAND
Aarhus
Horsens
Esbjerg
Odense
FYEN
Great Belt
Copenhagen (København)
ZEALAND
DAIRY PRODUCTS
LAALAND
FALSTER
RÜGEN I.
NORTH FRISIAN ISLANDS
Flensburg
Kiel
Kiel Canal
HELGOLAND
COD
Köslin
Rostock
Lübeck
SHEEP
Stettin
Hamburg
Altona
Elbe River
Oder
Havel
Berlin
Frankfurt on Oder
Potsdam
Kottbus
FRISIAN ISLANDS
HERRING
Emden
Groningen
Ems
Bremen
Weser
Aller R.
Hannover
Braunschweig
Magdeburg
OATS, RYE, PIGS, AND CATTLE
POTATOES
SUGAR BEETS
POTASH
HARZ MTS.
Saale
Halle
Leipzig
Dresden
Chemnitz
Weimar
Erfurt
Cassel
Helder
Zuider Zee
Amsterdam
The Hague ('s Gravenhage)
Utrecht
Rotterdam
Arnhem
Bielefeld
Münster
Lippe R.
Dortmund
Essen
Ruhr
Barmen
Elberfeld
Duisburg
Düsseldorf
Rhine River
Meuse
Cologne (Cöln)
Bonn
IRON
Aachen
Coblenz
Frankfurt on Main
Wiesbaden
Mainz
Moselle
Trier
Luxembourg
SAAR BASIN
Saarbrücken
Metz
LORRAINE
ALSACE
Strassburg
Nancy
Verdun
Flushing (Vlissingen)
Bruges
Ostende
Ghent (Gand)
Antwerp (Anvers)
Brussels (Bruxelles)
Dunkerque
Roubaix
Courtrai
Lille
Mons
Namur
Liége
COAL
ARDENNES
Arras
Cambrai
Somme
Amiens
St. Quentin
Aisne
Soissons
Reims
Oise R.
Paris
Marne
Châlons
Prague
2° Longitude J 4° East K from 6° L Greenwich 8° Genoa M 10° N 12° O 14° P

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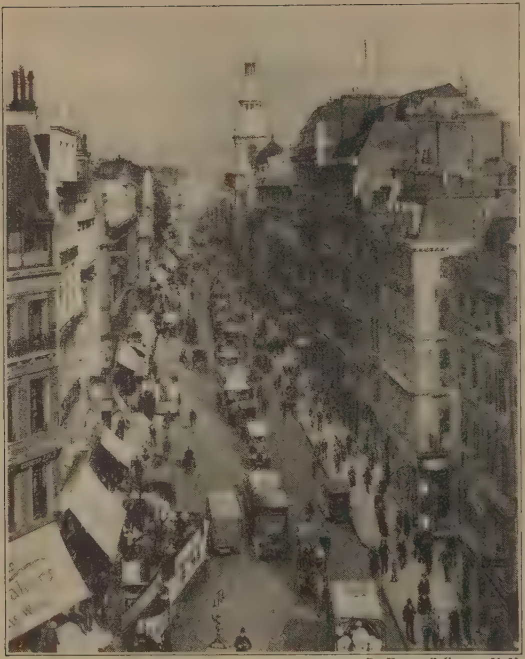


By Ewing Galloway, N. Y.

Figure 18. A street in one of the busiest shopping districts of London. Find a motor bus and a traffic policeman in the foreground of the picture.

For a long distance upstream from its mouth the Thames is wide and deep, and is bordered by low, swampy land. The place farthest east where the river was narrow enough and the ground dry enough for a bridge to be built in the early days was near where London Bridge stands today. The first bridge was probably narrow and made of wood, but it was very important; for it was here that roads from the southern parts of England met to cross the Thames, and then spread out to north and west.

Because the bridge was the meeting point for the roads of southern England, a settlement grew up at its northern end; and as time went on, this "bridge town" became the most important trading center of Great Britain. As you read further, watch for reasons why it has grown to be one of the world's greatest cities.

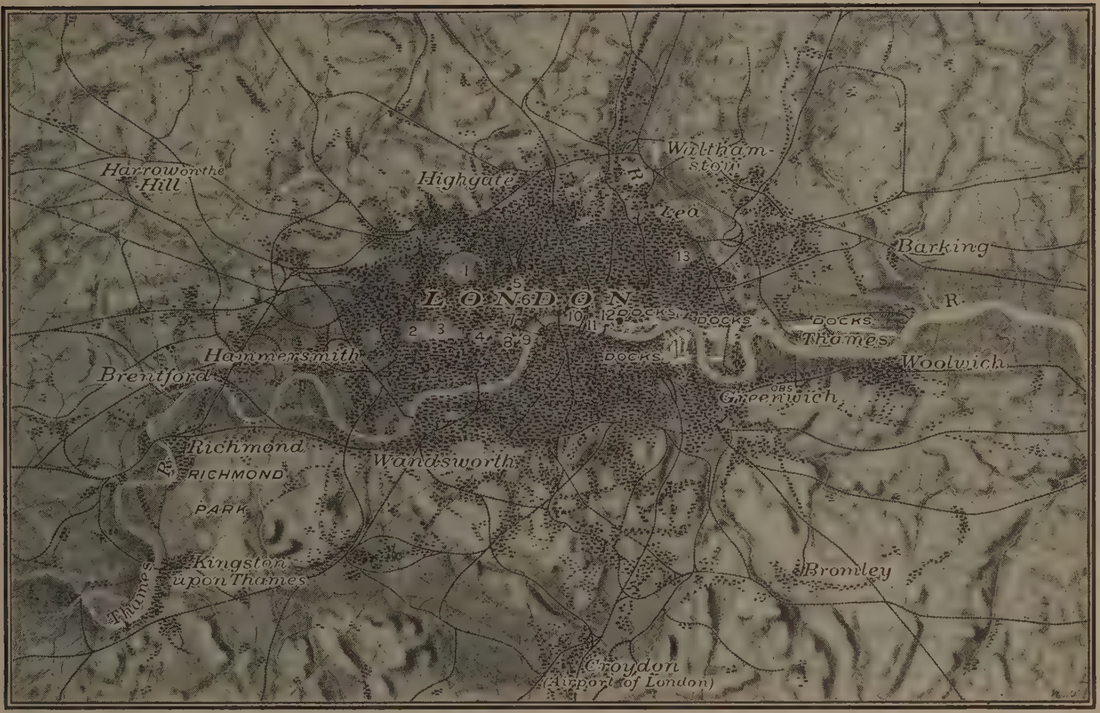
Today Old London is the heart of the business section of the great city. Like Lower Manhattan in New York, it is crowded with workers during the day; but at night, after the banks and business offices have closed, most of the buildings are empty and the streets are quiet.

Some famous buildings. In Old London, surrounded by business buildings, is St. Paul's Cathedral. This great church has a beautiful dome which towers above the surrounding roofs. The best shops, theaters, and hotels, and the famous museums and art galleries are in the part of the city west of old London. Here too are the Houses of Parliament and Westminster Abbey, a beautiful old church in which there are statues and busts of people whom the British admire and respect.

Parks and gardens. As London has grown and spread over the lowlands on both sides of the Thames, the people have saved many open spaces for public parks and gardens. Thus there are many pleasant places where the people of this great, crowded city may enjoy themselves out of doors. Find some of the parks on Figure 19.

A famous observatory. We shall surely wish to visit the famous observatory in the part of London known as Greenwich. The observatory is a domed building with a big telescope for studying the stars. It is well known the world over because it marks the place of the prime meridian of longitude, or the meridian of 0°. Find Greenwich on the map on pages 22–23 (*H5*) and on Figure 19.

You will remember that the meridians are the imaginary north-south lines which pass around the earth through the poles. They are numbered by degrees east and west from Greenwich. Since there are 360 degrees in a circle, the meridian of 180° is just halfway around the earth in either direction, west or east, from Greenwich. Use a globe to prove that this is true.


Harrow on the Hill
Highgate
Waltham-stow
R. Lea
Barking
LONDON
DOCKS
R. Thames
Woolwich
Hammersmith
Brentford
Greenwich
OBS
Richmond
RICHMOND PARK
Wandsworth
Kingston upon Thames
Thames R.
Bromley
Croydon (Airport of London)
1
2
3
4
5
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10
11
12
13

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Figure 19. A relief map of London and its surroundings. The numbers show the location of the following places of interest: 1, Regent's Park; 2, Kensington Gardens; 3, Hyde Park; 4, Buckingham Palace; 5, British Museum; 6, National Gallery; 7, Trafalgar Square; 8, Westminster Abbey; 9, Houses of Parliament; 10, St. Paul's Cathedral; 11, London Bridge; 12, Tower of London; 13, Victoria Park. Find the airport of London.

Down the Thames. We shall find it interesting to make the trip to Greenwich on a passenger boat which runs down the Thames. Just beyond the limits of Old London we shall pass the Tower of London, a great stone building erected as a fortress hundreds of years ago. Part of it is now a museum where many relics of historical interest are kept. Then we shall come to the Tower Bridge, shown in Figure 20. Study Figure 20 and its legend.

Ocean shipping. The busiest part of London's water front extends along the Thames for several miles below the Tower Bridge. There we shall see many large ocean freighters and passenger ships which have come from distant parts of the British Empire and from other countries of the world. They have brought to London large cargoes of raw materials, such as wool and hides, and great quantities of foodstuffs, such as wheat, meat, and fruits. Many of the huge storage warehouses which line the water front are filled with imported products for the British people, and many others with British goods to be shipped away.

Turn to the map on pages 22–23 and study the imports of London. From what distant parts of the British Empire do large quantities of foodstuffs and raw materials come to London?

Now study the exports of London. What kind of goods are they — foodstuffs, raw materials, or manufactures? To what parts of the British Empire do large quantities of the exports go?

The tides at London. Each day in the year there are two periods when the ocean waters rise to a high level, and two periods when they sink to a low level. Because of the tides the waters rise and fall twice a day in all the harbors and river estuaries along the ocean coasts. At London the difference in the level of the water at high tide and low tide in the Thames is about 25 feet, and at low tide the water is not deep enough for the larger ocean ships.

Docks for the large ships. Because of the changes in tide, large ocean ships cannot safely tie up at wharves along the banks of the Thames. If they did, they would sink into the mud on the river bottom at low tide. For this reason many large docks of a special kind have been built along the river downstream from the Tower Bridge.

The docks are giant basins of deep water shut off from the river by big gates. Each one is large enough to hold many ships at a time. The ships move in and out of them at high tide. Then the gates are closed, and they keep the water from flowing out of the docks when the tide falls. In this way the ships are perfectly safe while they are being unloaded and loaded again.

London's growth as a seaport. You have learned why London very early became the most important trading center of Great Britain. Can you think of any reasons why it became a busy seaport also?

You can see from the map that the Thames forms a navigable waterway between London and the sea, and that its mouth is not far distant from the continent of Europe. The British people began very early to trade with their neighbors on the Continent. It was natural, then, that ships should bring their cargoes up the Thames to the town that was already the leading trading center and from which goods could be sent in all directions over the roads.

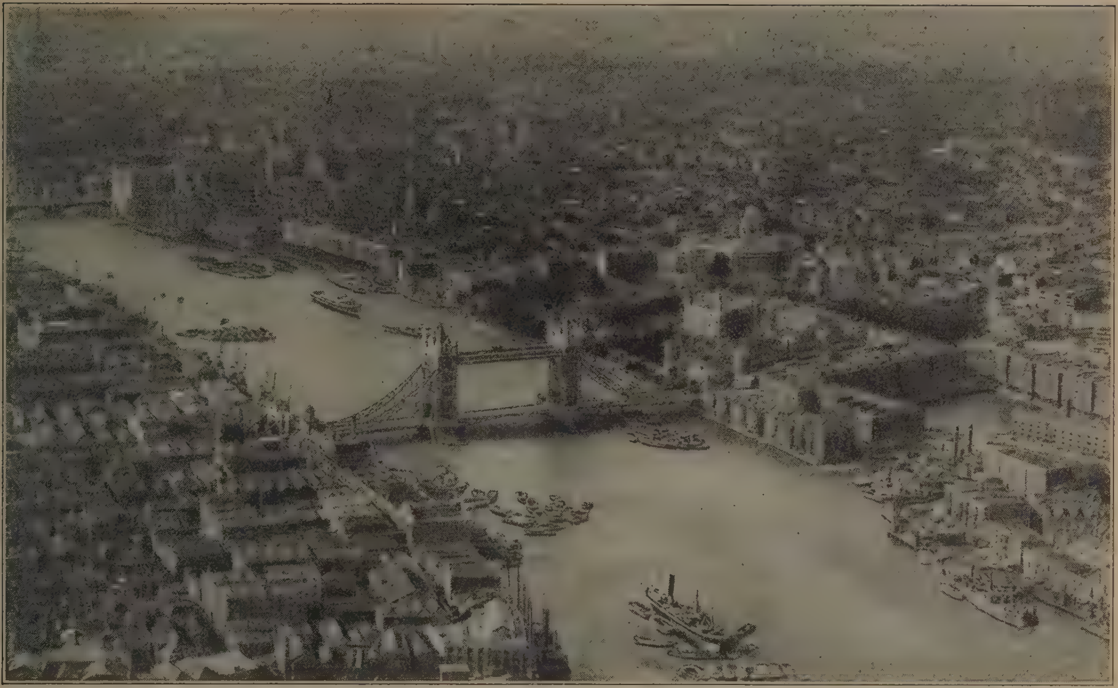
It was also natural that when railroads were built the leading seaport and trading center of Great Britain should become the greatest railroad center. The railroads helped to increase trade, and so London has continued to grow as a seaport. Today it is not only the leading port of the British Isles but one of the greatest ports of the whole world. Besides all the goods which it receives from distant lands for use by the British people, it imports large quantities of goods for *re-export* to other countries.

A great manufacturing center. On your trip down the Thames you will notice that there are many factories along the crowded water front. As you would expect, London, with its many railroads and its great shipping business, is a great manufacturing center. Give as many reasons as you can to explain why. Remember that manufacturers must have raw materials, power, and workers for their factories, and good means of marketing their products.

Among all the different industries of London the making of clothing and the preparation of foodstuffs are the most important. We found the same thing true in New York City. What reason can you give for it?

A world city. The longer we stay in London, the more we realize that it is not only a great British city but a great world city. Its ships trade in all the great seaports of the earth, and its people carry on business in nearly every country. Its banks are among the wealthiest in the world, taking a leading part in the work connected with the exchange of money between all the commercial nations. Because of this work we call London a great *financial center*.

London is also a great *cultural center*, where people from many lands gather to study art and music, to use the books in its wonderful libraries, and to study the collections in its famous museums.



Surrey Flying-Services' Photograph from Orient and Occident

Figure 20. An airplane view of part of London, looking up the Thames. In the upper left corner of the picture is the dome of St. Paul's Cathedral. In the center is the Tower Bridge, and just beyond it, at the right, is the old Tower of London. The lower central portion of the Tower Bridge can be lifted to allow boats to pass through. The large ocean ships, however, dock downstream from the bridge, where the water is deeper.

Something to prove. By answering the following questions prove that you understand why London has always attracted people and trade.

1. Why did London become the most important trading center of Great Britain a long time ago?
2. Why did London make an early start as a seaport?
3. Why has London become the greatest railroad center of Great Britain?
4. How did the building of railroads help to increase the foreign commerce of London?
5. Why has London become a great manufacturing center?
6. Why do so many people from all parts of the world visit London?

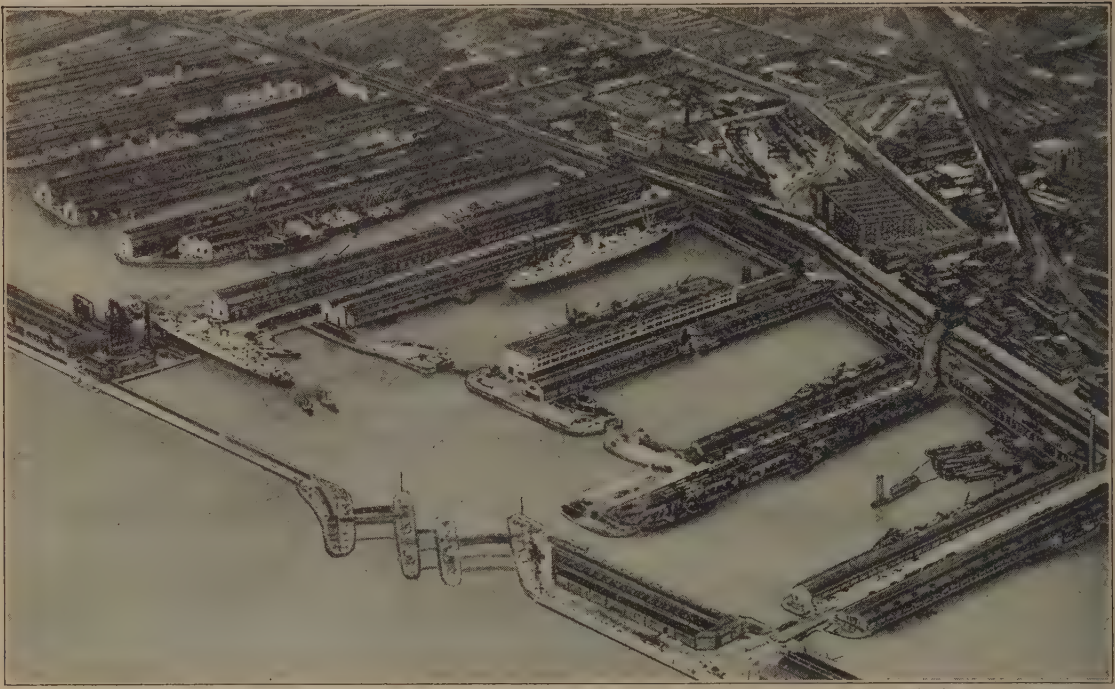
Something to explain. Explain what has been done to make it possible for large ocean ships to load and unload at London. Use Figure 19 in making your explanation.

3. OTHER SEAPORTS OF THE BRITISH ISLES

Because the long, irregular coast line of the British Isles provides so many good harbors, British trade is carried on through many different seaports. But although there are many ports, Liverpool is the only one which can be compared with London in importance. London and Liverpool together carry on half of all the trade of the British Isles.

Find Liverpool on the map on pages 22–23 (*F4*). On what sea is it located? What port of Northern Ireland is located on that sea? What port of the Irish Free State? What is the leading port of Scotland? In what part of Scotland is it located? What is the leading port of Wales?

As you study about these and other seaports of the British Isles, try to discover how their trade is connected with the work and needs of the people of Great Britain and Ireland.



By Aerofilms from Ewing Galloway, N. Y.

Figure 21. Part of the water front at Liverpool, as it looks from an airplane. The oblong-shaped basins where ships are loading and unloading are the deep-water docks. All the wharves between the docks are lined with storage warehouses, and on some of them there are railroad tracks. Can you tell why this is so?

English Seaports

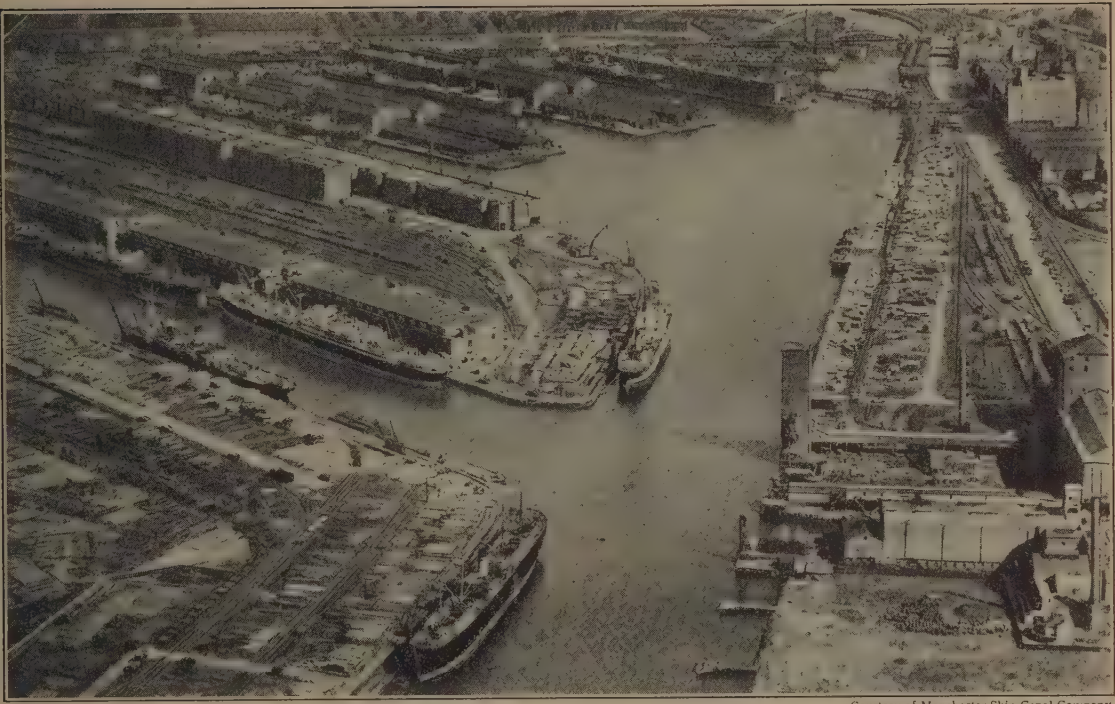
Liverpool. If you are on a ship coming into Liverpool from the south, you will see the low hills of Ireland and Wales for some hours before you reach the end of your journey. Trace your route on the map on pages 22–23, and try to imagine that your ship is now moving slowly into the harbor of Liverpool.

There are many other ships coming and going in the harbor. Judging from the map, from what countries do you think some of them have come? What have they brought to Liverpool? What do you think those that are leaving are carrying away?

The harbor and the docks. Liverpool is on the estuary of the Mersey River. Because of the rise and fall of the tides in the harbor, the people of Liverpool have had to build docks that can be closed by gates like those at the port of London. The docks extend along the river for about seven miles, providing space for many ships to load and unload at one time. Like the docks at London, they are bordered by huge warehouses for the storage of all kinds of goods. *See Figure 21.*

The large freighters that come to Liverpool load and unload in the docks, but the great ocean liners land their passengers at a floating wharf which rises and falls with the tide. A narrow bridge, also built to change its position with the changing level of the water, connects the wharf with the land.

A great trading center. Liverpool is the port through which most of the British trade with the United States, Canada, and South America is carried on, and altogether its foreign trade is almost as great as that of London. Here, as at London, the leading



Courtesy of Manchester Ship Canal Company

Figure 22. An airplane view of some of the docks at Manchester. This great manufacturing city is about thirty-five miles inland, but the ship canal has made it a busy port. Besides raw cotton, ships from distant lands bring large quantities of mineral oils and wheat to Manchester. What reasons can you give for this?

imports are raw materials and foodstuffs, and the leading exports are manufactured goods. What do you see in the location of Liverpool which helps to explain why its trade with the Americas is greater than that of London?

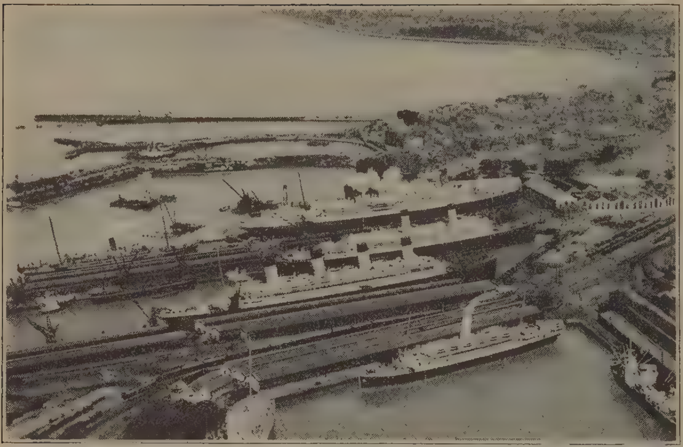
Liverpool imports more cotton than any other port in the world. Most of it comes from our Southern States, but large quantities also come from Egypt and smaller quantities from India. Which of these two countries is part of the British Empire?

Some of the cotton is used in mills near Liverpool, but most of it goes farther inland to a great cotton-manufacturing district which centers around Manchester. Find Manchester on the map on pages 22–23 (*F4*) and notice that it is connected with the estuary of the Mersey by a canal. This is the Manchester Ship Canal, and some of the boats loaded with cotton pass by the docks at Liverpool and carry their cargoes directly to the great cotton-manufacturing city. *See Figure 22.*

The next most valuable imports of Liverpool are wheat, flour, and meat. They come chiefly from the United States, Canada, and Argentina. Which of these countries is a British dominion?

You have discovered that Liverpool is the great gateway through which raw cotton enters England. It is also the principal gateway through which cotton goods manufactured in English mills are shipped to distant parts of the world.

Other work in Liverpool. Like all great ports, Liverpool is a manufacturing center because of its advantages for receiving raw materials and shipping away manufactured



Aerofilms from Ewing Galloway, N. Y.

Figure 23. Some of the world's largest passenger ships at Southampton. Find Southampton on the map on pages 22–23 (*G5*) and explain why its harbor is so well protected from storm waves.

goods. It is also a very important *terminus*, or ending place, for railroads from all parts of Great Britain. The railroads that meet here bring large quantities of manufactured goods from all parts of the island to be shipped to distant lands, and carry back large quantities of raw materials and foodstuffs to the inland industrial centers.

Two ports on the North Sea. On the map on pages 22–23 find the cities of Hull (*G4*) and Newcastle on Tyne (*G3*). These are England's leading ports on the North Sea. Because of their location, much of their trade is with the countries bordering that sea and the Baltic Sea.

Hull, on the estuary of the Humber River, is an important ocean gateway for a great woolen-manufacturing district centering round Leeds and Bradford, farther inland. For this reason raw wool is one of its leading imports, and woolen goods are among its exports.

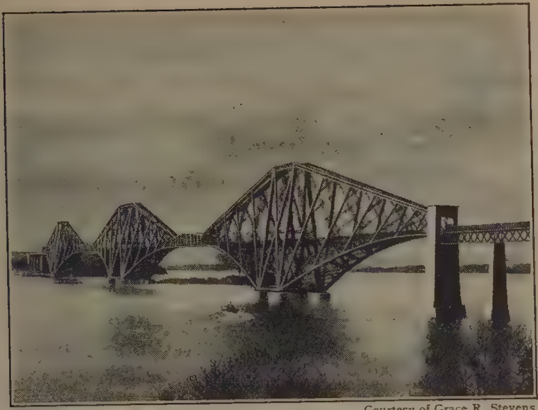
Newcastle, on the estuary of the river Tyne, is a great coal-exporting port. What do you find on the map (pp. 22–23) to explain this fact? While you are looking at the map, find the place where iron ore is mined near Middlesbrough (*G3*). That city has great blast furnaces and steel mills. Steel from Middlesbrough and abundant coal have helped to make Newcastle a great center for the manufacture of machinery and steel ships. The lower Tyne, like the lower part of the Delaware River in our country, is one of the great shipbuilding centers of the world.

Southampton. Southampton, on the southern coast of England, is the port used by some of the largest passenger ships that cross the Atlantic. It was chosen as a port for these great liners because the harbor is deep and well protected from storm waves. *See Figure 23.*

Southampton also carries on much foreign commerce. Foodstuffs and raw materials from distant lands come to this port to be sent inland by rail, and manufactured goods from inland cities are shipped away. Southampton itself is becoming a manufacturing center of importance. Can you explain why?

A list to make. The five most important English ports are described below. Write their names in a list in the order in which they are described. Put stars against the two ports which together carry on half of all the trade of the British Isles.

1. The port which carries on the most trade with distant parts of the British Empire in the Eastern Hemisphere.
2. The port which carries on the most trade with the Americas.
3. The port on the southern coast, used by some of the largest transatlantic liners. Southampton
4. Two ports which carry on much trade with countries bordering the North Sea and the Baltic Sea. Hull Newcastle



Courtesy of Grace R. Stevens

Figure 24. The railroad bridge over the Firth of Forth in Scotland. The bridge is built of steel and is one of the longest in the whole world.

Ports of Scotland

The firths. The Scotch people call the drowned river mouths of their country *firths.* The deep firths of the highland region in the north are much like the fiords of Norway, but those of the central lowland are shallower and more like the estuaries of England. On the map on pages 22–23 find the Firth of Clyde (*E3*) and the Firth of Forth (*F2*). Notice that they lead into the very heart of the central lowland of Scotland. *See Figure 24.*

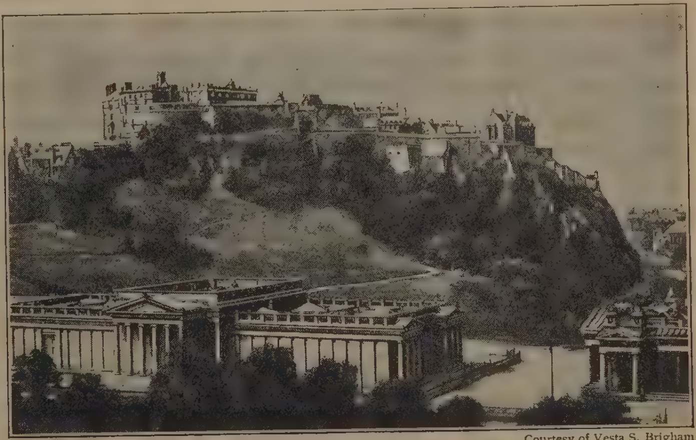
Glasgow and the river Clyde. If you take a boat trip up the Clyde to Glasgow, you will see huge shipbuilding yards on both sides of the river. The shipyards begin at Glasgow and extend downstream for many miles, and they make the Clyde the greatest shipbuilding river in the world.

The river Clyde was formerly so shallow that ocean ships could not enter it, but it has been deepened by dredging so that large ships can go upstream to Glasgow. The deepening of the river brought so much shipping to Glasgow that this city is now the leading seaport of Scotland. Its population of more than a million makes it the second largest city of the British Isles.

Glasgow is a great manufacturing city, partly because it is a busy seaport, and partly because coal is found close by. Among its great variety of manufactures, ships' engines are of special importance. Explain why.

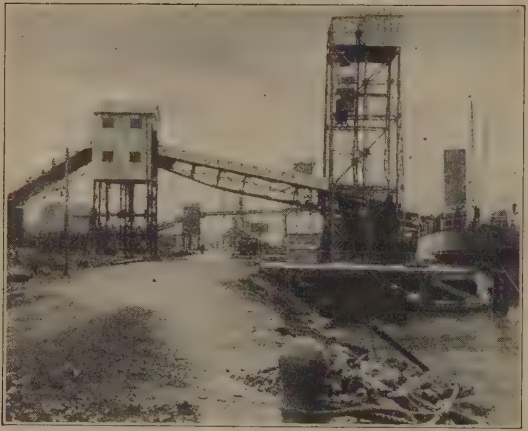
From Glasgow to Edinburgh. A trip from Glasgow to Edinburgh takes us through the central lowland of Scotland. As we travel through this region we shall see that the people carry on mixed farming. Fields are planted to grain, vegetables, and fodder crops, and cattle and sheep are grazing in the pastures. Why is this lowland the principal farming region of Scotland?

Edinburgh and its port. Edinburgh is a beautiful old city lying at the foot of several hills. On one of the hills is an old castle which was built long ago to protect the city. Before Scotland was united with England in government Edinburgh was the home of the Scottish kings and queens, and Holyrood Palace, where they lived, is still used at times by the British king and queen. Edinburgh has long



Courtesy of Vesta S. Brigham

Figure 25. Edinburgh Castle. The first settlement of Edinburgh grew up around this hill, for the castle served as a fortress where the people could defend themselves from attack. The building in the foreground is the National Portrait Gallery.



From Ewing Galloway, N. Y.

Figure 26. A ship loading coal at Cardiff. From the map on pages 22–23 name the parts of the world to which large quantities of Welsh coal are exported.

been a center of learning, and for this reason the printing and publishing of books, magazines, and atlases is very important there. *See Figure 25.*

The port of Edinburgh is the smaller adjoining city of Leith on the Firth of Forth. Most of the exports of Scotland pass through the port of Glasgow, but Leith is important for its imports, especially of foodstuffs.

Dundee. Farther north, on the Firth of Tay, is the port of Dundee. Here we can visit mills which use large quantities of jute from India. Jute is a plant fiber, and it is used to make twine, rope, and coarse kinds of cloth known as burlap and gunny cloth. Great numbers of sacks, or bags, made of gunny cloth are also manufactured at Dundee, and are exported to distant lands for use in shipping various kinds of farm products.

Cardiff and Belfast

The chief seaport of Wales. On the map on pages 22–23 find Cardiff, the chief seaport of Wales (*F5*). This city is near one of the largest coal fields in Great Britain and is a great coal-exporting center. *See Figure 26.*

Welsh coal is so well suited to smelting that the manufacture of metals and metal products is the most important industry of this part of Great Britain. Cardiff and other cities of the region have large blast furnaces for smelting iron ore, steel mills, and factories for the manufacture of iron and steel products. Most of the iron ore is imported, chiefly from Spain. Tin, copper, and other metal ores are also imported from distant lands to be smelted with Welsh coal and used for the manufacture of many different metal products. The tin is used largely in the manufacture of tin plate, of which tin cans are made.

The seaport of Northern Ireland. Turn to the map again and find Belfast, the capital and chief seaport of Northern Ireland (*E3*). What is the leading import of this city? Flax

Belfast has an excellent harbor lined with shipyards which will remind you of Glasgow. Where do you think the shipbuilders get their supplies of coal, iron, and steel?

The imports of flax suggest that Belfast is also a textile-manufacturing city. Have you ever seen any of the beautiful Irish linens? Belfast is the center for their manufacture. The farmers in the surrounding country raise flax, but they can supply only a small part of all the fiber that is needed by the linen mills. From what countries are large quantities of flax imported? What connection is there [illegible] between manufacturing and export trade at Belfast?

Reminders of seaports. Name one or more British seaports which come to your mind when you think of the following imports and exports:

1. Imports of raw cotton and exports of cotton goods. Liverpool Manchester
2. Imports of flax and exports of linen goods. Belfa
3. Exports of manufactured goods from Scotland. Glasgow
4. Exports of coal from British mines. Newcastle Cardiff
5. Imports of metal ores. Cardiff
6. Imports of wool. Hull

4. Some Great Manufacturing Districts

The British people began manufacturing very early, and today they are one of the greatest manufacturing nations in the world. As you study further, you will discover that manufacturing in Great Britain owes its growth to somewhat the same conditions which have led to the growth of manufacturing in the northeastern part of the United States. Can you suggest what some of these conditions are?

The industrial districts and the coal fields. Figure 27 shows where the principal industrial, or manufacturing, districts of the British Isles are located. Compare this map with the map on pages 22–23, and you will see that every industrial district in the British Isles except the one around London and the one at Belfast is on or near a coal field. The abundance of coal for power has been one of the most important reasons for the growth of British manufacturing.

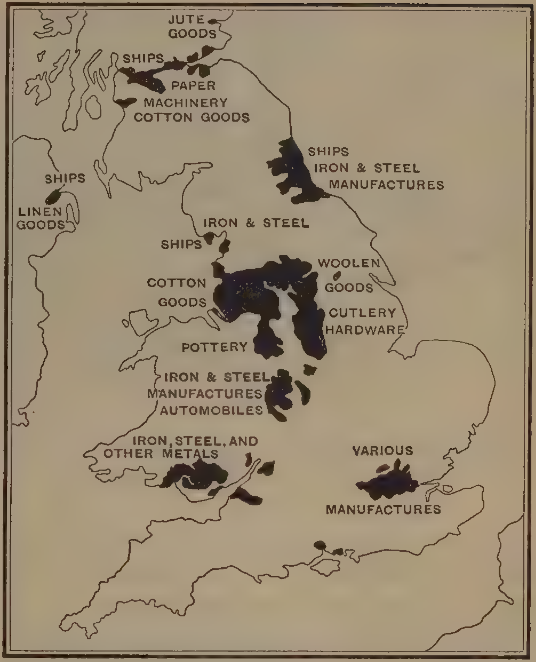


Figure 27. Industrial districts of the British Isles.

The Textile Industries

A very old industry. One of the oldest industries in Great Britain is woolen-manufacturing. It began hundreds of years ago in the part of England known as Yorkshire, on the eastern side of the Pennine Range. In those early days all the wool came from sheep pastured in the Pennines, and the spinning and weaving were done by hand. Textile machinery has now taken the place of the spinning wheels and hand looms of long ago, and all the work is done in mills. Today Yorkshire is one of the greatest woolen-manufacturing districts in the world, chiefly because it made such an early start, but also because it has abundant supplies of coal for power. Find this woolen-manufacturing district on Figure 27.

The pasture lands of Great Britain still provide much wool, but not nearly enough for all the mills, and vast quantities are imported from distant lands. Much of it comes from the British dominions of Australia, New Zealand, and the Union of South Africa, and large quantities are imported from Argentina, Uruguay, and the Falkland Islands. Two thirds of all the imports of wool come to the port of London. What two seaports nearer the Yorkshire industrial district also import wool?

Hull, L [illegible]

Leeds and Bradford. On the map on pages 22–23 find Leeds and Bradford (*G4*), the leading cities of the woolen-manufacturing district. In these cities and in the neighboring towns and villages the making of woolen goods is far more important than any other kind of work. The woolen cloth made in the British mills is some of the best in the world, and it finds markets all over Great Britain and in many distant lands. Much of the cloth that is exported goes by train across the Pennines to the great port of Liverpool. *See Figure 28.*

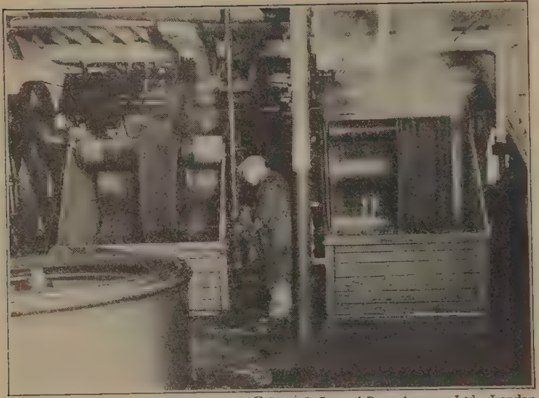


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Figure 28. Scouring newly woven pieces of woolen cloth in a mill near Leeds. Scouring, or cleansing, is one of the processes of finishing the cloth.

Cotton-manufacturing in Lancashire. You already know that the city of Manchester, on the western side of the Pennines, is the center of a district where huge quantities of cotton goods are manufactured. This part of England is known as Lancashire, and it is the greatest cotton-manufacturing district of the whole world. Hundreds of thousands of people in Manchester and the neighboring towns make their living by working in spinning mills, weaving mills, and mills for dyeing and finishing cotton cloth. Find this great cotton-manufacturing district on Figure 27.

Cotton-manufacturing began much later than woolen-manufacturing in Great Britain; for there was no home supply of raw cotton, and it was not until the invention of the cotton gin, in 1792, that large quantities of cotton began to be grown in our Southern States, from which the British draw their largest supplies of this raw material. Today cotton-manufacturing is the most important of all the British industries, and it provides the most valuable of all the British exports.

There were two principal reasons why cotton-manufacturing developed west of the Pennines. One was that Lancashire is on the windward side of England, and therefore it has a moister climate than Yorkshire. If cotton fibers are dry, they are apt to snap in the spinning, and therefore a moist climate is a great advantage in cotton-manufacturing. The other reason was that Lancashire is so conveniently located for receiving raw cotton from the United States. Here, as in the Yorkshire woolen district, the abundance of coal has helped greatly in the growth of manufacturing.

Vast quantities of cotton goods are shipped from this great manufacturing district to the British colonies, to tropical lands in distant parts of the earth, and to China, where there are millions of people who wear cotton clothing. Through what port do most of the cotton goods leave Great Britain?

Cotton and woolen mills in Scotland. Scotland has a cotton-manufacturing district centering around Glasgow, and a woolen-manufacturing district in the valley of the river Tweed, but they are far less important than the great textile districts of Lancashire and Yorkshire in England.

Linen-manufacturing. The greatest linen-manufacturing district in the British Isles is in Northern Ireland, centering in and around the city of Belfast. What did you discover about the importance of this industry in connection with the foreign trade of Northern Ireland?

Industries depending on Iron and Steel

Iron ore in Great Britain. On the map on pages 22–23 find the places where iron ore is mined in Great Britain. In this country, as in our own, the abundance of iron ore and coal has led to the development of many industries which make use of iron and steel. The mines of Great Britain provide from one half to two thirds of the iron ore used in the blast furnaces. The rest of the ore is imported, chiefly from Spain, northern Africa, and Sweden.

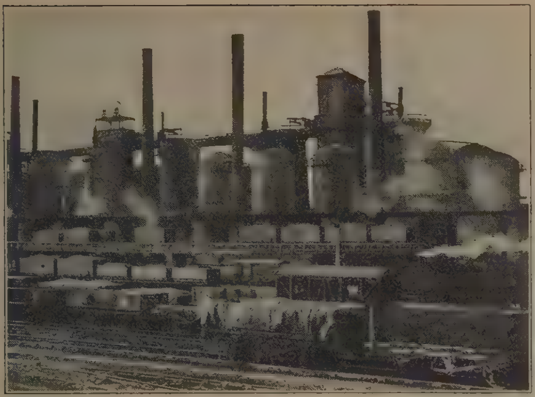

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Figure 29. Some of the blast furnaces at Middlesbrough. The owners of this plant also own coal mines, iron mines, and limestone quarries. Explain why.

You already know that there are blast furnaces and steel mills at Middlesbrough and in southern Wales. There are others at various places where iron ore and coal can be brought together easily. *See Figure 29.*

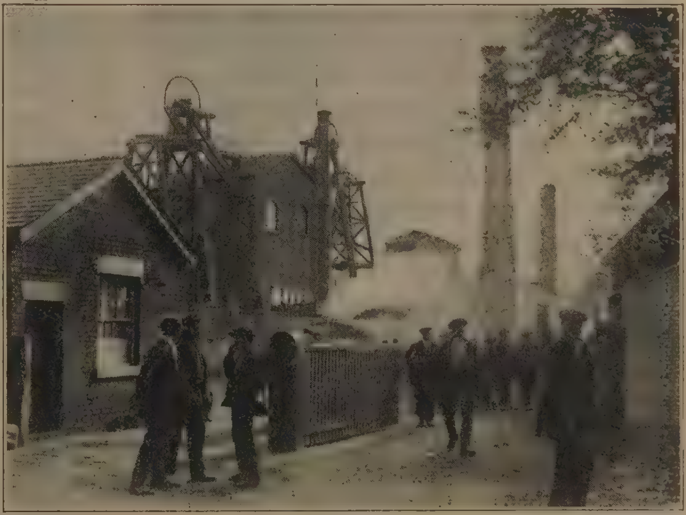
Birmingham and the "Black Country." On the map on pages 22–23 find Birmingham (*G4*). This is the largest city of the great industrial district known as the "Black Country." The Black Country has many coal mines, and it is crowded with towns which manufacture all kinds of products of iron and steel. *See Figure 30.*

The special work of the Black Country began long ago when first iron ore and then coal were discovered in the district. Today its blast furnaces and steel mills produce only a part of the iron and steel used in its factories. Huge quantities of these metals come from other parts of Great Britain to the Black Country, where they are used to make all kinds of iron and steel products, from needles and nails to automobiles and locomotives. *See Figure 31.*

Birmingham has become the largest city and the greatest manufacturing center of the Black Country chiefly because it is a meeting point for roads, railroads, and canals from all directions. Because it is the great railroad center of the Black Country, it is the principal distributing point for the manufactures of that district.

Sheffield. A short distance south of the woolen-manufacturing district on the eastern side of the Pennines is another industrial district where huge quantities of iron and steel products are made. This district centers around Sheffield. You may have heard of Sheffield knives, for this city long ago became famous for its manufactures of cutlery, or cutting tools.

Find Sheffield on the map on pages 22–23 (*G4*). The discovery of iron ore and coal gave this city its start long ago as a center for the manufacture of iron and steel. Today all kinds of small tools and hardware are made in Sheffield and the neighboring towns, and Sheffield scissors, knives, razors, and other cutlery are sold in many distant parts of the world.



From Ewing Galloway, N. Y.

Figure 30. British miners at a coal mine near Birmingham. Coal-mining provides work for many thousands of men in Great Britain. Why are the coal-mining districts also manufacturing districts?

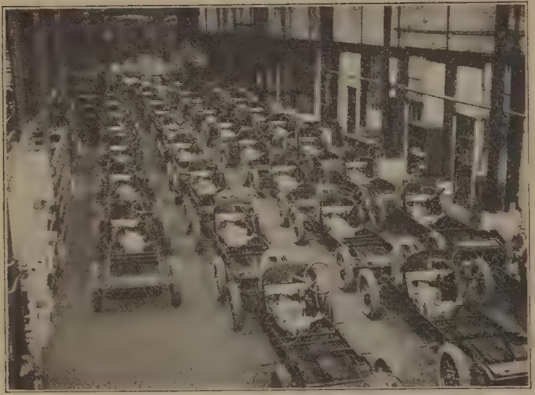


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Figure 31. In an automobile factory near Birmingham. The framework and engines of these cars have been completed, and are ready for the bodies.

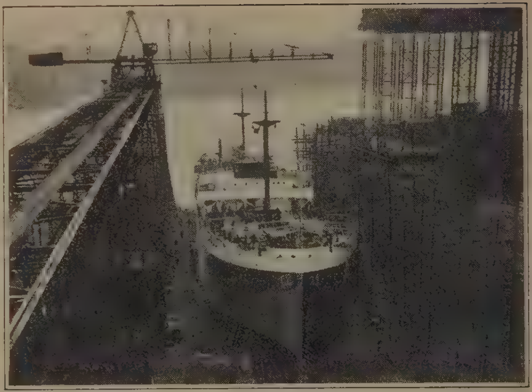

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Figure 32. An ocean freighter being built in one of the shipyards on the river Tyne. What advantages has Great Britain for building ships of steel?

Other Industries

The English potteries. Between the Birmingham iron-and-steel district and the Lancashire cotton district are the "pottery towns." The largest of them is Stoke on Trent. These towns manufacture all kinds of pottery, from the finest china to the coarsest earthenware. Find the pottery district on Figure 27.

The principal raw material used in the making of pottery is clay, and the pottery towns grew up long ago where large deposits of clay suitable for this work were found. Today much of the best clay has been used up, and supplies are brought from other parts of England. But the pottery towns still lead in this industry, partly because they made such an early start, and partly because they are on a rich coal field.

Shipbuilding. You already know of three places in the British Isles where shipbuilding is a great industry. Where are they? There are still other centers of this industry at various places along the coast, for the British people need thousands of ships to carry on their trade with other parts of the world. They have more merchant ships than any other nation, and they build ships for many nations besides themselves. *See Figure 32.*

The variety of manufactures. You know now what the most important British manufactures are, but there are many, many others. In fact, it would be hard for you to think of anything that is not manufactured somewhere in the British Isles. The number of different industries is enormous, and far more people are engaged in manufacturing than in any other kind of work.

Something to prove. Prove your knowledge of the great industrial districts of the British Isles by giving the correct names to complete the following sentences. As you do so, point to the district on the map and explain its advantages for the kind of manufacturing for which it is famous.

1. The great cotton-manufacturing district centers around Manchester in Lancashire.
2. The great woolen-manufacturing district centers around Leeds and Bradford, in Yorkshire.
3. The two leading districts in the manufacture of iron and steel products center around Birmingham and around Sheffield.
4. The greatest center for the smelting of metal ores is in southern Wales.
5. The great linen-manufacturing district centers around Belfast in Northern Ireland.
6. The greatest shipbuilding district is along the river Clyde in Scotland.

5. Farming and Fishing

Thus far we have visited the British seaports and industrial districts where trade and manufacturing are the most important kinds of work. In the country districts we shall find farmers raising crops and live stock, and on the shallow seas surrounding the islands we shall find many fishermen busy with their work. What reasons can you suggest for the importance of farming and fishing in the British Isles?

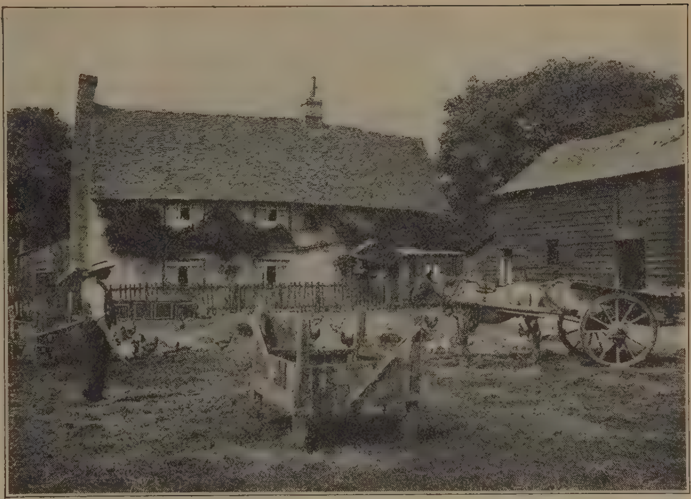

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Figure 33. A farmyard in the southern part of England. From what you see in the picture, what products do you think this farmer probably sells to the market men in the nearest town or city?

Glimpses of the farming districts. In the lowlands of the British Isles, away from the cities, you will find many small farms and many large country estates. On the estates there are fine old houses surrounded by parklike grounds, and even the farmers' cottages are unusually attractive with their thatched roofs, their neatly trimmed hedges, and their flower gardens. *See Figure 33.*

Scattered through the farming districts are many little villages with narrow streets and thatched cottages overgrown with roses. Some of the villages have a factory or two, but they are chiefly market centers for the surrounding farm lands.

The need for food. As you travel through the farming regions, you will see very little land lying idle. The British Isles are so densely populated that as much land as possible must be used for raising crops and live stock to provide the people with food. But the islands are so small and so many parts of them are hilly or mountainous that the amount of good farming land is limited, and so the farmers can produce only part of the food that is needed. For this reason large quantities of foodstuffs are imported from other parts of the world.

Specialized farming. In order to make the best possible use of the farm lands, most of the farmers specialize in certain products, just as the farmers in New England do. Near each of the larger cities there are dairy farms and poultry farms. Some of the farmers specialize in raising pigs, for the English people are very fond of bacon. Others specialize in raising vegetables and fruits for the city markets.

On the map on pages 22–23 find the Scilly Islands (*D6*) and the Channel Islands (*F6*). The climate of these islands is very mild, and the farmers raise early vegetables to send to the markets in the British cities.

Wheat lands. The drier part of the plain of England, northeast of London, is the only part of the British Isles where the climate is well suited to wheat. This is a winter-wheat section, where the farmers plant the seed in the autumn and harvest the grain in the early summer. *See Figure 34.*

The wheat farmers also raise crops to fatten cattle for market. They buy the cattle from Ireland and Scotland, and from

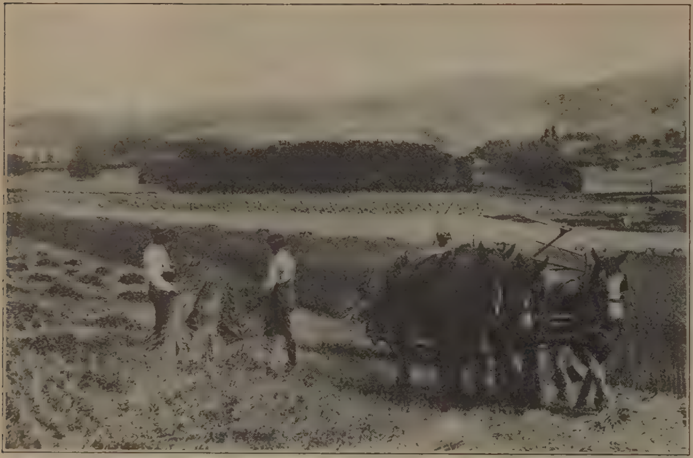

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Figure 34. Harvesting winter wheat on an English farm. The wheat is being cut with a reaper, and the two men at the left are stacking the bundles in shocks to dry in the sun. At what season of the year was this picture taken? Give a reason for your answer.

other parts of England. In what belt in our country do the farmers fatten large numbers of cattle for market?

How the hilly lands are used. Many of the hilly lands of the British Isles are used as pastures, partly for cattle, but more largely for sheep. In this way they help to provide the British people with wool and meat. *See Figure 35.*

Some parts of the hilly lands belong to wealthy people who keep them for private hunting grounds, and others are playgrounds for all who wish to visit them. The beautiful lake district of England and the part of Scotland where Loch Lomond is located are visited each year by thousands of British people and by many tourists from other lands.

British fisheries. If you were to take a trip around the coasts of the British Isles, you would soon discover that the people depend on the shallow seas surrounding the islands and also on the waters farther north between Scotland and Iceland for part of their food supply. The fishermen bring in cod, herring, haddock, sole, mackerel, and other kinds of fish.

On the map on pages 22–23 find Aberdeen in Scotland (*F2*), and Hull, Grimsby, and Yarmouth in England (*G–H4*). These are the four greatest fishing ports of the British Isles. On what sea are they located? You can easily guess from their location that the North Sea is the greatest of the fishing grounds near the British Isles.

At the fishing ports you will see many sights to remind you of the fishing ports along the coast of North America from New England to Newfoundland. You may be there when the steam trawlers and the smaller sailing boats are starting off for the fishing banks, or when they return loaded with fish. Near the wharves where the fishing boats land their catch you will see racks for

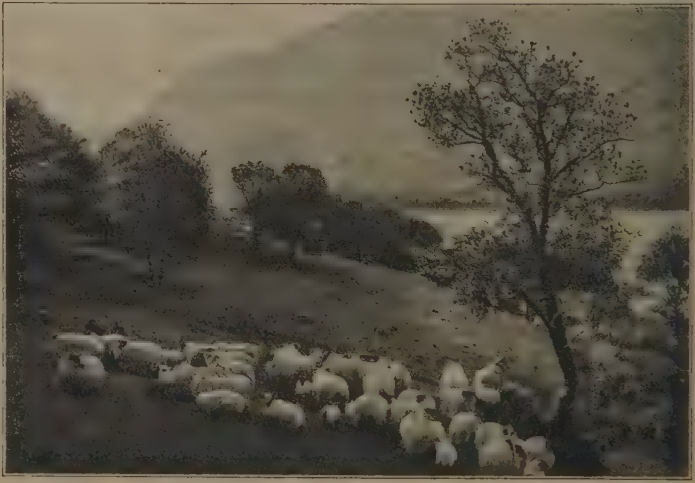


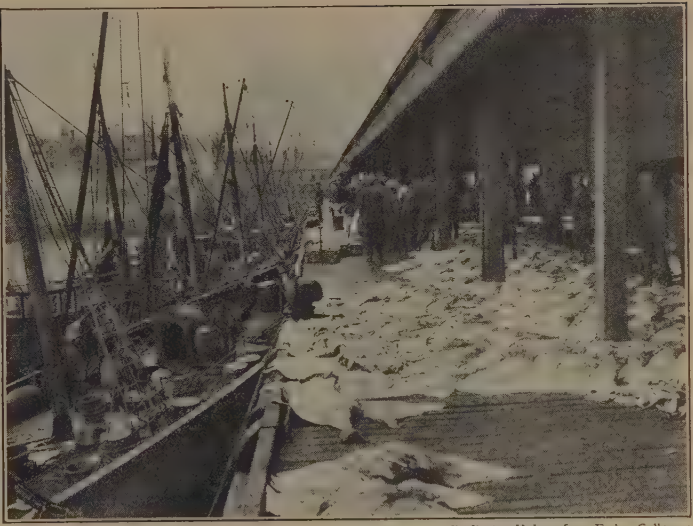
Figure 35. Sheep grazing in the Highlands of Scotland. The rougher parts of the British Isles make excellent sheep pastures, and Great Britain is one of the leading sheep-raising countries of Europe.

drying codfish, and buildings where herring are smoked and cured. You will also see the special trains that hurry the fresh fish to the cities farther inland. *See Figure 36.*

Thousands of boys in the coastal towns grow up loving the sea, and many of them become fishermen while they are still very young. Some who begin work as fishermen later become sailors on the British merchant ships which cross and recross the seas.

Some things to explain. Explain why

1. The shallow seas around the British Isles are rich fishing grounds.
2. The irregular coast line of the British Isles helps the fishermen.
3. The British Isles provide large markets for fish.



By Burton Holmes from Ewing Galloway

Figure 36. A view of one of the fish wharves at Aberdeen, Scotland. At the left are some of the fishing boats, and at the right are quantities of codfish, cleaned and ready to be salted and dried. Of what New England fishing port does this remind you?

Some farming questions. In answering these questions, you will need to recall some of the things that you learned about farming in the United States.

1. Suppose two American farmers, one from the corn belt and the other from New England, should visit the farming districts of the British Isles. Which one would see more things to remind him of home? Why?
2. More acres of land in the British Isles are planted to oats and hay than to any other crops. How is the climate suited to the raising of oats and hay?
3. Find the wheat lands of the British Isles on the map on pages 22–23. What "climate reason" can you give to explain why they are located there rather than farther north or west?
4. Why are there no great cattle ranches in the British Isles?
5. Why are there many dairy farms, poultry farms, and market gardens near the large cities in the British Isles?
6. Why is it impossible for the farmers of the British Isles to supply enough food for all the people?

6. THE IRISH FREE STATE

You already know that the Irish Free State is a self-governing part of the British Empire, just as the dominions are. It is quite different from Great Britain, for it is chiefly an agricultural country, and the people produce a surplus of foodstuffs for export. Do you know why farming, rather than manufacturing, is the principal kind of work there?

Farm lands and pasture lands. As you travel through the Irish Free State, you will notice that more of the land is used for pasture than for crops. That is because much of the lowland region is swampy and the uplands farther north and south are hilly. Many of the swampy and hilly lands are not well suited to the raising of crops, but they are covered with rich green grass which makes excellent pasturage for cattle.

A visit to an Irish farm. If we visit one of the better farms, we shall learn that the farmer uses about one fourth of his land for crops, and the rest for pasture. In the farm-

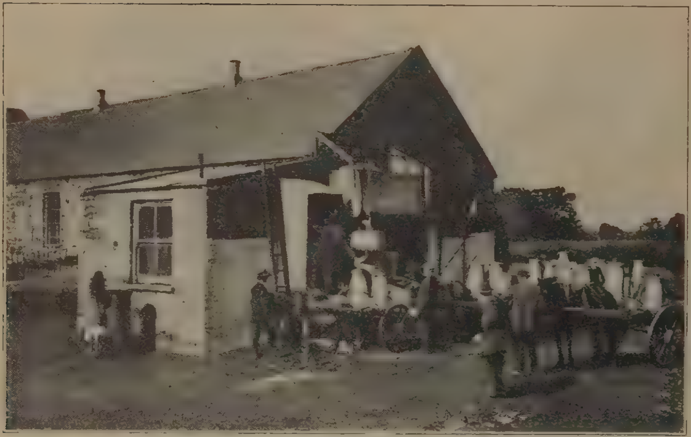


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Figure 37. Irish farmers at a milk station. The farmers sell the cream, which is separated from the milk at the station, and take the skimmed milk home to feed to their pigs and chickens.

yard we shall find pigs and chickens, and in the pastures we shall see dairy cows and beef cattle. We may see several fine horses too, for the Irish are very fond of horses, and they raise many for hunting and racing.

Near the house we shall find a vegetable garden, and when we visit the cultivated fields we shall learn that the farmer's chief crops are potatoes which he raises for food, and oats, hay, and other crops which he raises to feed his live stock. He makes his money by selling live cattle and pigs, poultry, eggs, and cream. *See Figure 37.*

Peat bogs. As we travel through the Irish Free State we shall not find any great coal-mining districts as we did in Great Britain, for Ireland has but few coal seams thick enough to be worth mining. But we shall not go far before we see people working in the peat bogs. Peat is a fuel which is formed in swamps and bogs by the decaying of leaves, wood, and roots. The people dig it from the bogs, cut it in blocks, and dry it. It makes a smoky fire and is of no use for making steam power, but it provides many of the Irish people in the country districts with fuel for use in their homes. *See Figure 38.*

Manufacturing. The lack of coal has been a great handicap, or hindrance, to manufacturing in the Irish Free State, and at present the leading industries are those which make use of the farm products. Among them the making of butter and cheese, the milling of grain, and the curing of bacon are especially important.

Recently the government has worked out a plan for using the water power of the river Shannon to provide hydroelectricity for the country. A power plant is being built near Limerick, and when it is completed hydroelectricity will be sent over wires to Dublin and other cities. In time this will probably lead to a much greater development of manufacturing in the Irish Free State.

Seaports and trade. On the map on pages 22–23 find Dublin, the capital of the Irish Free State (*D4*). Dublin is the largest city of the country, and the chief port for trade with Great Britain. *See Figure 39.*

After what you have learned about farming in the Irish Free State, you will not be

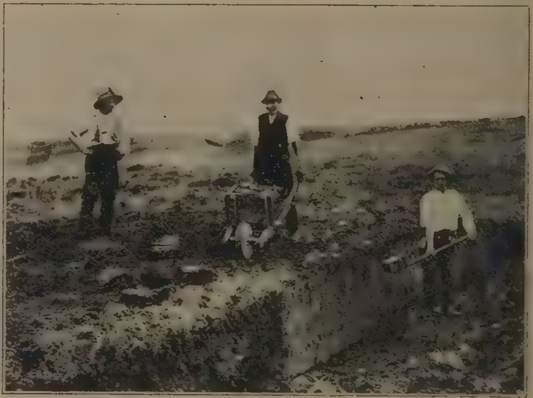

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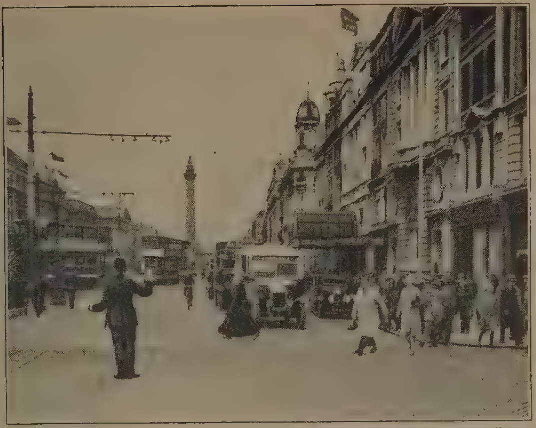
Figure 38. Cutting peat. About one seventh of the Irish Free State is covered with peat bogs, some of which are more than forty feet in depth.



By Burton Holmes from Ewing Galloway

Figure 39. One of the busy streets in the city of Dublin, the capital of the Irish Free State. Notice the "two-story" electric cars in the picture.

surprised to find that live cattle, butter, eggs, and bacon are among the leading exports. Large quantities of these farm products are shipped from Dublin across the Irish Sea to Liverpool.

In exchange for its exports of foodstuffs, the Irish Free State imports large quantities of British manufactured goods. Dublin is the chief center for the distribution of these products. How does its location explain its importance as a gateway for trade with England?

Cork, on the southern coast of Ireland, is another port from which large quantities of foodstuffs are shipped to Great Britain. Find Cork and Cobh on the map on pages 22–23 (*C*5). Cobh is on an island in the harbor of Cork. It will remind you of Southampton, in England, for it is a port of call for some of the great passenger liners which run between America and England.

Some things to explain. 1. Explain why (1) England provides good markets for the surplus farm products of the Irish Free State, and (2) the Irish Free State provides good markets for English manufactures.

2. Explain why the leading exports of the Irish Free State are live-stock products.

7. THE GROWTH OF BRITISH MANUFACTURING AND COMMERCE

The most valuable exports from Great Britain are (1) cotton goods, (2) iron and steel goods, (3) machinery, (4) coal, and (5) woolen goods. The most valuable imports are (1) meats, (2) cotton, (3) wheat and flour, (4) wool, and (5) butter.

By studying these lists you should be able to answer the following questions:

1. What kind of work in Great Britain provides a large surplus of products for export?
2. What great needs of the British people are supplied in part through foreign commerce?

Advantages for manufacturing. In visiting the industrial districts of Great Britain you discovered that British manufacturing owes its growth largely to the following advantages:

1. An abundance of coal for power.
2. Large supplies of iron ore.
3. A dense population, providing millions of factory workers and a large home market for manufactured goods.
4. Many good seaports, making it easy to import raw materials and export manufactured goods.
5. Large markets for manufactured goods in distant parts of the British Empire.

In addition to these advantages, we should remember that the British made an early start in manufacturing, gaining the lead over nations which began later.

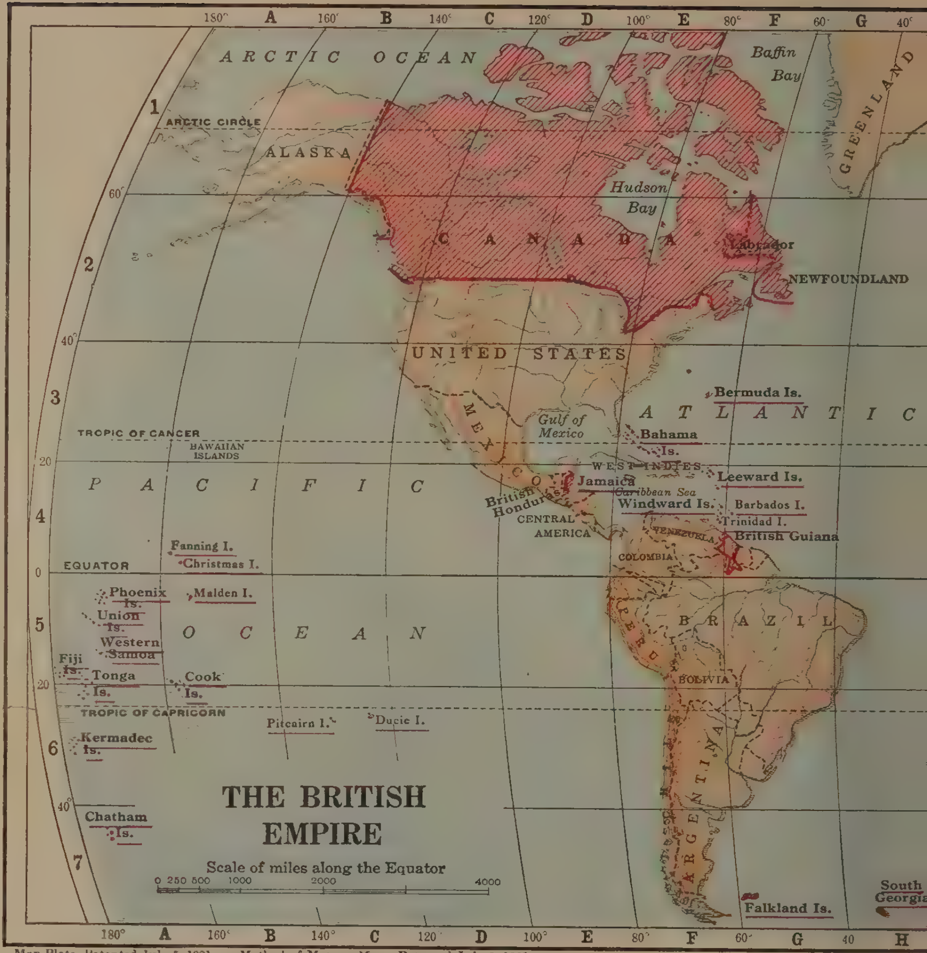
In Great Britain, as in the United States, the building of railroads and the more recent use of automobiles and motor trucks for transportation have also helped greatly in the growth of manufacturing.

Fuel and power handicaps. In spite of all their advantages for manufacturing, the British people have certain handicaps to overcome. They have almost no petroleum, and so they must get nearly all their fuel oil and gasoline from distant lands.

BRITISH EMPIRE

	Area in Square Miles
Great Britain	89,041
Northern Ireland	5,994
Irish Free State	26,592
Possessions in Europe	124
Union of South Africa	471,917
Other possessions in Africa	3,345,484
India	1,805,332
Other possessions in Asia	182,551
Australia	2,974,581
New Zealand	103,568
Pacific Islands	199,585
Canada	3,684,723
Newfoundland and Labrador	152,734
Other possessions in America	115,921
Total	13,158,147

	Population
Great Britain	42,919,710
Northern Ireland	1,248,000
Irish Free State	2,971,992
Possessions in Europe	246,000
Union of South Africa	6,928,580
Other possessions in Africa	45,568,820
India	318,942,480
Other possessions in Asia	12,633,205
Australia	6,262,720
New Zealand	1,344,469
Pacific Islands	1,160,000
Canada	9,519,220
Newfoundland and Labrador	266,154
Other possessions in America	2,236,428
Total	452,247,778


THE BRITISH EMPIRE
Scale of miles along the Equator
0 250 500 1000 2000 4000
ARCTIC OCEAN
ARCTIC CIRCLE
ALASKA
CANADA
Baffin Bay
GREENLAND
Hudson Bay
Labrador
NEWFOUNDLAND
UNITED STATES
MEXICO
Gulf of Mexico
Bermuda Is.
ATLANTIC
Bahama Is.
WEST INDIES
Jamaica
Leeward Is.
Caribbean Sea
Windward Is.
Barbados I.
Trinidad I.
British Honduras
CENTRAL AMERICA
VENEZUELA
British Guiana
COLOMBIA
BRAZIL
PERU
BOLIVIA
ARGENTINA
Falkland Is.
South Georgia
TROPIC OF CANCER
HAWAIIAN ISLANDS
PACIFIC OCEAN
Fanning I.
Christmas I.
EQUATOR
Phoenix Is.
Malden I.
Union Is.
Western Samoa
Fiji Is.
Tonga Is.
Cook Is.
TROPIC OF CAPRICORN
Pitcairn I.
Ducie I.
Kermadec Is.
Chatham Is.
A B C D E F G H
180° 160° 140° 120° 100° 80° 60° 40°
1 2 3 4 5 6 7
60° 40° 20° 0 20 40°

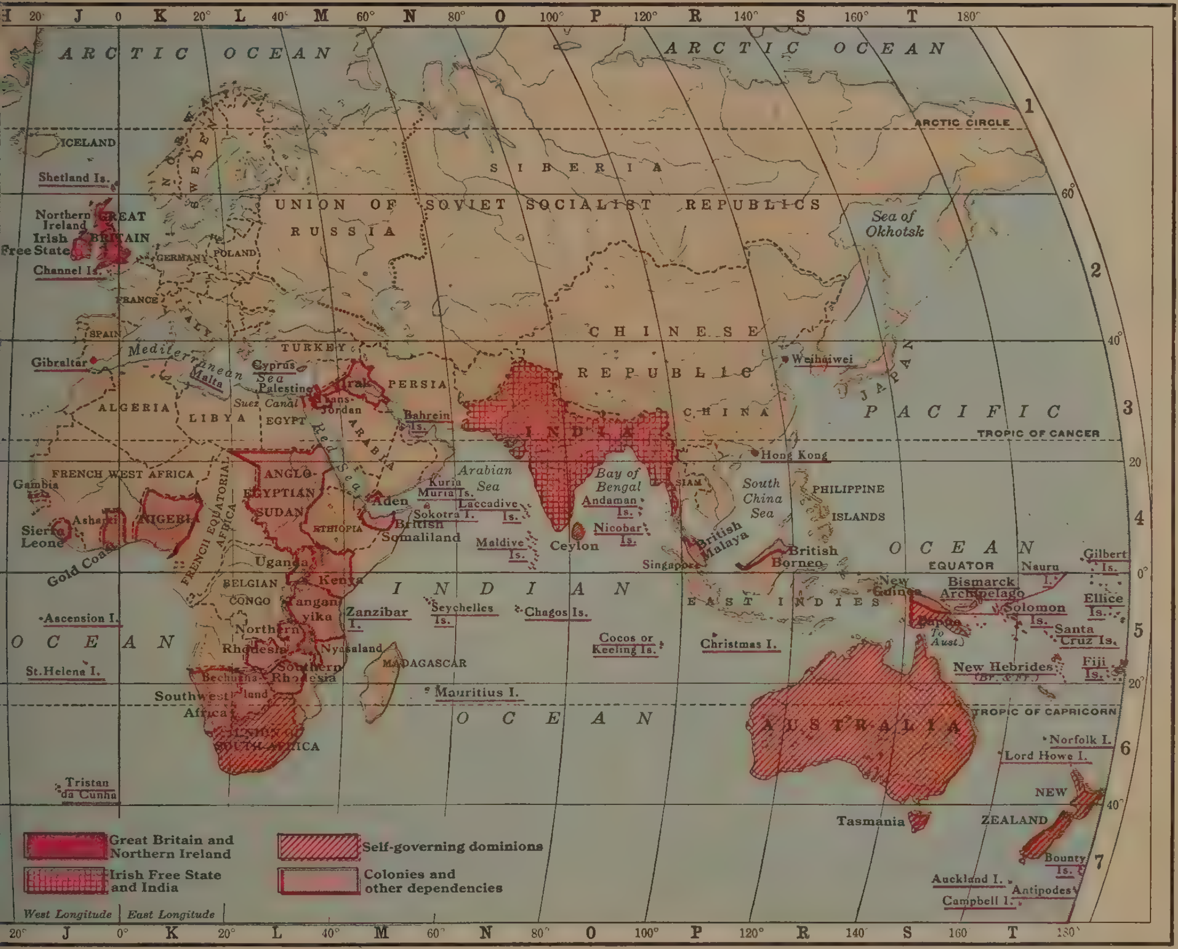
Map Plate, Patented July 5, 1921 · Method of Making Maps, Patented July 5, 1921

The rivers of Great Britain are too small to provide much water power for making electricity. The people make good use of what water power they have, but they must depend on steam power to make most of their electric power. This is a great handicap, for water power is the cheapest source of electricity.

The need for raw materials and markets. The British people need more iron ore than their mines can produce, and they have few metal ores other than iron in their country. Therefore they must purchase additional supplies of iron ore and many kinds of metals from other countries. They cannot produce enough wool for their woolen mills, and because of the cool climate they cannot grow any of the cotton needed for their greatest manufacturing industry. In order to keep their mills and factories running, they must import large quantities of these and many other raw materials from distant lands.

Even though Great Britain is densely populated, the people do not need all the goods produced in the manufacturing plants. The manufacturers must find large markets in other lands if they are to sell all they produce.

Turn over to page 44.


ARCTIC OCEAN
ARCTIC CIRCLE
ICELAND
Shetland Is.
Northern Ireland
Irish Free State
GREAT BRITAIN
Channel Is.
GERMANY
POLAND
FRANCE
SPAIN
Gibraltar
Mediterranean Sea
Malta
Cyprus
ALGERIA
LIBYA
EGYPT
Suez Canal
Palestine
Trans-Jordan
Irak
TURKEY
PERSIA
ARABIA
Bahrein Is.
Red Sea
SIBERIA
UNION OF SOVIET SOCIALIST REPUBLICS
RUSSIA
CHINESE REPUBLIC
CHINA
Sea of Okhotsk
JAPAN
Weihaiwei
Hong Kong
PACIFIC OCEAN
TROPIC OF CANCER
INDIA
Arabian Sea
Bay of Bengal
Kuria Muria Is.
Sokotra I.
Laccadive Is.
Aden
British Somaliland
ETHIOPIA
Maldive Is.
Ceylon
Andaman Is.
Nicobar Is.
SIAM
British Malaya
Singapore
South China Sea
PHILIPPINE ISLANDS
British Borneo
EAST INDIES
EQUATOR
New Guinea
Bismarck Archipelago
Papua (To Aust.)
Solomon Is.
Santa Cruz Is.
Nauru I.
Gilbert Is.
Ellice Is.
New Hebrides (Br. & Fr.)
Fiji Is.
FRENCH WEST AFRICA
Gambia
Sierra Leone
Ashanti
NIGERIA
Gold Coast
FRENCH EQUATORIAL AFRICA
ANGLO-EGYPTIAN SUDAN
Uganda
Kenya
BELGIAN CONGO
Tanganyika
Zanzibar I.
Northern Rhodesia
Nyasaland
Southern Rhodesia
Bechuanaland
Southwest Africa
UNION OF SOUTH AFRICA
MADAGASCAR
Mauritius I.
Seychelles Is.
Chagos Is.
Cocos or Keeling Is.
Christmas I.
INDIAN OCEAN
Ascension I.
St. Helena I.
Tristan da Cunha
OCEAN
TROPIC OF CAPRICORN
AUSTRALIA
Tasmania
Norfolk I.
Lord Howe I.
NEW ZEALAND
Bounty Is.
Auckland I.
Antipodes
Campbell I.
Great Britain and Northern Ireland
Irish Free State and India
Self-governing dominions
Colonies and other dependencies
West Longitude | East Longitude
H J K L M N O P R S T
20° 0 20° 40° 60° 80° 100° 120° 140° 160° 180°
1 2 3 4 5 6 7
60° 40° 20° 0° 20° 40°

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MAP STUDIES

1. About how far north of the equator are the British Isles? Give your answer in degrees of latitude. 2. What part of North America is in the same latitude as the British Isles? 3. What two British dominions are in North America? 4. Which one of them extends north of the arctic circle? 5. What British possessions in the Western Hemisphere are tropical lands?

Canada

6. What continent in the Eastern Hemisphere is a British dominion? 7. In what part of that dominion is the climate best suited to white people? Why? 8. What other British dominion is southeast of Australia? 9. In what zone is that dominion?

10. What large part of Asia belongs to the British Empire? 11. What part of India is within the tropics? 12. What tropical island off the southern coast of India belongs to the British?

13. What British dominion is located in the southern part of Africa? 14. In what zone is most of that dominion? 15. What does that fact suggest with reference to the healthfulness of the climate for white people?

16. Name the British possessions which extend northward in an unbroken line from the Union of South Africa to Egypt. 17. What can you say about the climate of those possessions? 18. In what oceans do you find islands belonging to the British people?

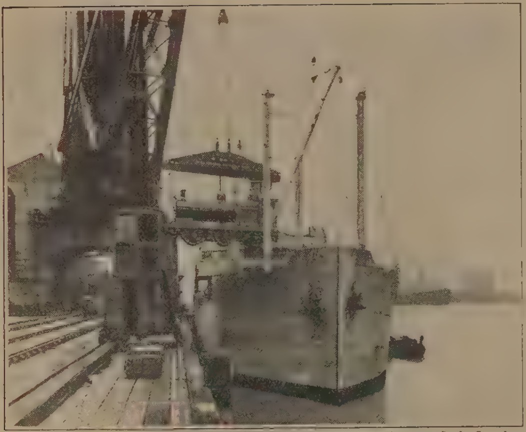

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Figure 40. Loading locomotives for export at Newcastle, England. The ship, the loading machinery, and the locomotives were all built at Newcastle.

The problem of food supply. The British Isles are so small, the population is so dense, and so many of the people are engaged in manufacturing that the farmers and fishermen cannot supply enough food for all the people. Therefore the British must buy part of their foodstuffs from countries which have extra supplies to sell.

The growth of commerce. From all these facts you can see that as population has increased in Great Britain, and manufacturing has become the most important kind of work, the British people have been faced with three great problems:

1. How to obtain enough raw materials for their factories.
2. How to increase their food supplies.
3. How to find markets for their surplus manufactures; that is, the manufactures which they do not need themselves.

They have solved these problems by building up a great fleet of merchant ships and developing a large foreign trade. In this work they have been helped greatly by their island location and their irregular coast line with its many good harbors. *See Figure 40.*

Long ago the British began to send trading ships to distant lands, and it was partly through trade that they gained the lands of their great empire. As they became colonizers, or settlers of new lands, they developed farming and other kinds of work in their colonies which would help to supply the home factories with raw materials and the home markets with food. As more and more people went to live in the colonies, they provided *colonial markets* for manufactured goods from the home country; and today the British people have an enormous trade with their colonial possessions.

At the same time the British have been building up trade with foreign countries, buying raw materials and foodstuffs from them, and selling them manufactured goods. Thus commerce and manufacturing have grown side by side, each one helping the other.

A very important reason for the remarkable growth of British commerce and manufacturing is the people themselves. They have always been a strong, energetic nation; and because of this, they have been able to make the best use of the resources of their little island country and to find ways of overcoming its handicaps.

Map work. Use the map on pages 22–23 to answer the following questions:

1. What foodstuffs and raw materials do the British import from their three dominions in the Old World? from the Americas? from India, Ceylon, and the East Indies?
2. What metals do the British import in large quantities from the Americas? What fuels do they import from the United States?
3. What distant parts of the British Empire provide valuable markets for manufactures?

Special credit work. Many kinds of cloth from British mills are sold in drygoods stores in our country. Visit such a store and ask if you may have samples of British goods to show to your classmates.

Sentences to complete. Complete the sentences below by giving the correct names to fill the blank spaces:

1. The British Isles are made up of the two large islands of Great Britain and Ireland and many small islands.
2. The three parts of Great Britain are England, Scotland, and Wales.
3. Ireland is divided politically into [illegible] Ireland and the Irish Free State.

A list to make. Write down the names of the cities described below. When you have finished, you will have a list of the eight largest cities in Great Britain.

1. The capital of the British Empire. [illegible]
2. The leading seaport of Scotland. [illegible]
3. The great industrial city of the Black Country. Birmingham
4. The greatest cotton-importing port in the world. Liverpool
5. The largest city of the Lancashire cotton-manufacturing district. Manchester
6. An English city famous for the manufacture of cutlery. Sheffield
7. The largest city of the Yorkshire woolen-manufacturing district. Leeds
8. The old Scottish city near the Firth of Forth. Edinborgh

Matching cities and manufactures. Each city in the first column below is noted for one of the kinds of manufactures given in the second column. Match the cities and their manufactures correctly.

1 Belfast	6 cotton goods
2 Birmingham	2 iron and steel
3 Cardiff	1 linen goods
4 Glasgow	7 pottery
5 Leeds	4 ships
6 Manchester	3 tin plate
7 Stoke on Trent	5 woolen goods

Something to prove. Prove by answering the following questions that you understand why the British are a great manufacturing nation:

1. What advantages have the British for getting raw materials from all parts of the world?
2. What mineral resource have they which provides power for their mills and factories?
3. Why have they no trouble in getting workers for their mills and factories?
4. What advantages have they for marketing manufactured goods?

A trade test. 1. Some of the important imports and exports of the British Isles are given below. Make a list of those which are imports, and another of those which are exports.

coal ex
flax im
meats im
butter im
iron ore im

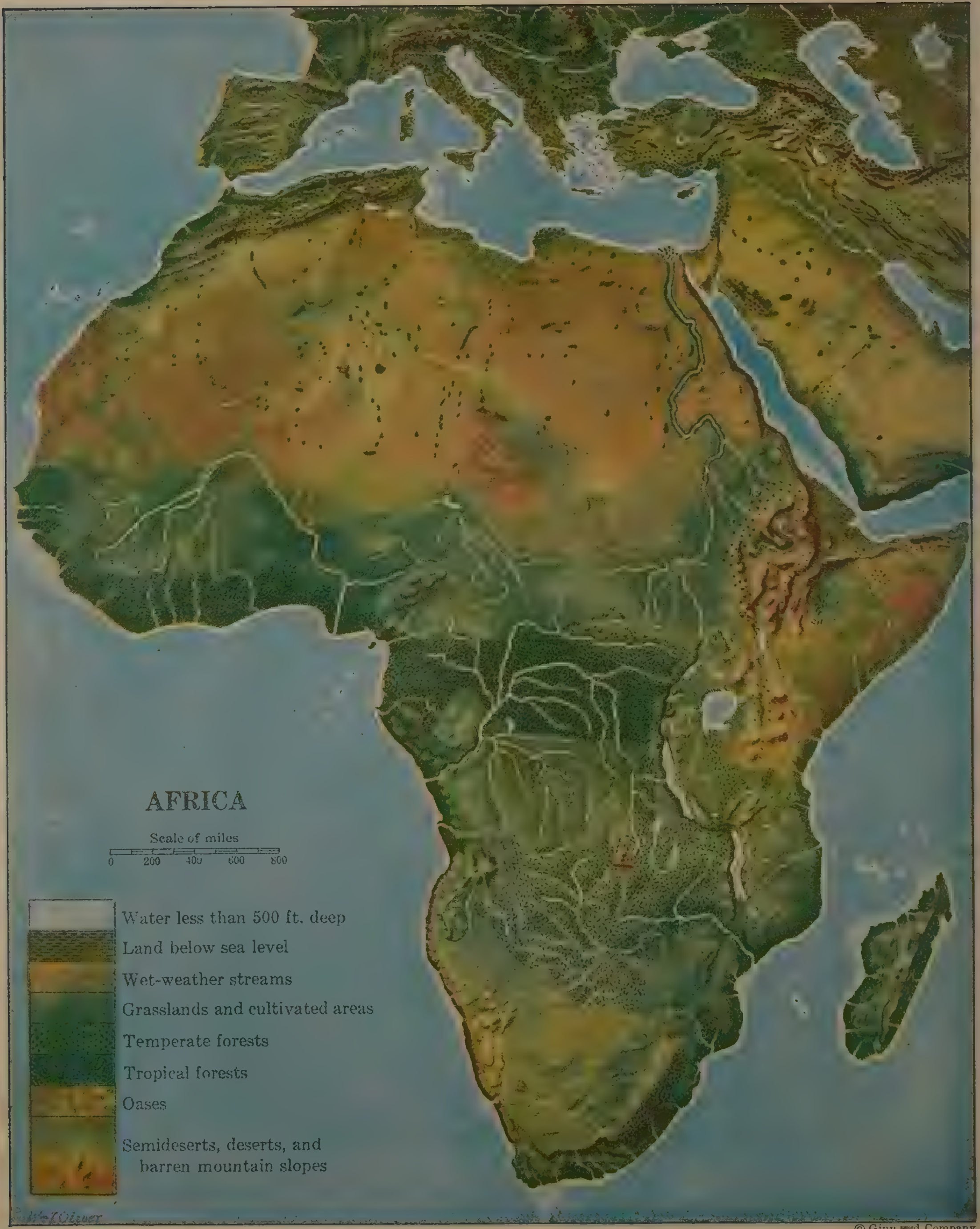
machinery ex
raw wool im
linen goods ex
raw cotton im
mineral oils im

cotton goods
iron and steel
wheat and flour
woolen goods
hides and skins

2. Explain why the British people need to import large quantities of the products in your first list.
3. What kind of work provides all but one of the products in your second list?

Giving reasons. Complete each sentence below by giving reasons for the fact which it states:

1. The British are more nearly able to supply their needs for fish than for any other important kind of food because ______________.
2. The British people produce more foodstuffs per acre of farm land than the people of the United States do, yet they have to import large quantities of foodstuffs because ______________________________.
3. The building of merchant ships is a very important kind of work in the British Isles because ______________________________.
4. It is fortunate that Great Britain has many good harbors because ______________.
5. London is the largest city of the British Isles because ______________________.
6. Liverpool is the leading seaport for trade with the Americas because ______________.
7. Trade with the United States is very important to the manufacturers of Lancashire because ______________________________.
8. The people of the Irish Free State are able to help to provide the people of England with foodstuffs because ______________.
9. The Irish Free State is not a great manufacturing country because ______________.


AFRICA
Scale of miles
0
200
400
600
800
Water less than 500 ft. deep
Land below sea level
Wet-weather streams
Grasslands and cultivated areas
Temperate forests
Tropical forests
Oases
Semideserts, deserts, and barren mountain slopes

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III. BRITISH LANDS IN AFRICA

Foreword. Across the Mediterranean Sea from Europe lies Africa. In this great continent there are but three independent countries: Egypt, Ethiopia, and Liberia. All the rest of the African lands belong to one or another of the European nations.

About one third of the continent of Africa is under the control of the British people. Find the British lands in Africa on the map on pages 42–43 and name the one that is a self-governing dominion. The rest are colonies, protectorates, and dependencies.

As you study about the lands in Africa which are controlled by the British and other European nations, find answers to the following questions:

1. Of what value are possessions in Africa to the European nations?

2. In what ways are the European people helping the native people of Africa?

1. Africa and its People

Do you know why so much of Africa is controlled by European nations? This section will help you to discover some of the reasons.

The native peoples. Africa is the homeland of the negro race; and even though many people born in Europe or descended from Europeans now live in certain parts of the continent, there are far more colored people than white people there.

Before the coming of the white men most of the natives of Africa obtained their food by hunting, fishing, and gathering wild nuts, fruits, and berries. Some of them had little gardens where they raised a few vegetables, but their farming was of the simplest kind.

Some of the native people of Africa now work on farms and plantations and in mines owned by white people, and some help to care for live stock. Many, however, still live almost as simply as their forefathers did.

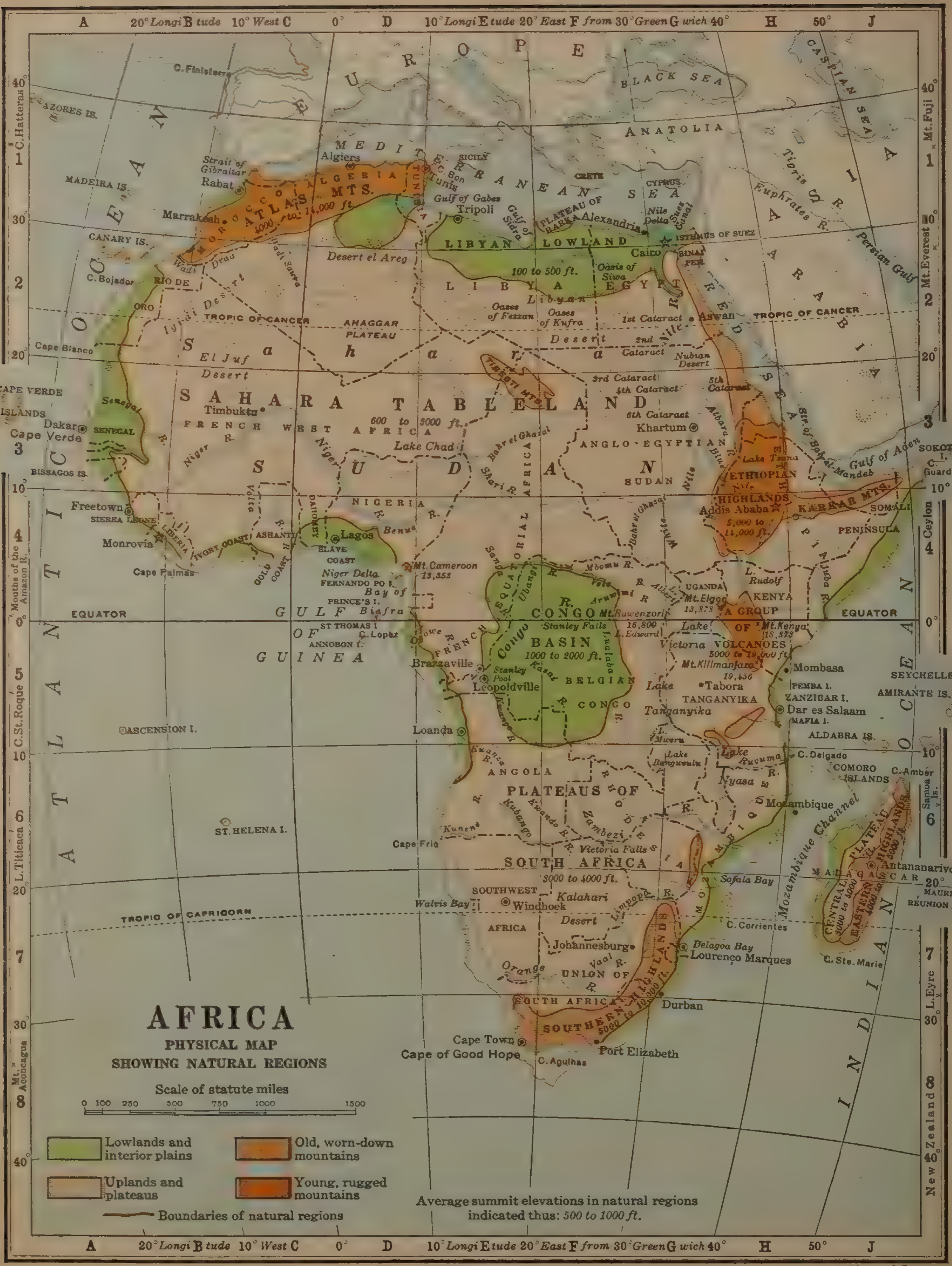
People from Asia. Many of the people now living in the northern part of Africa are descendants of white people who came from southwestern Asia long ago. Other Asiatic people, who have come to Africa more recently, are natives of India. They have been brought to some of the British possessions to work on plantations and to help in the building of railroads. Since their homeland is warm, they are able to work in a hot climate.

People from Europe. Most of the white people who have settled in Africa during the last hundred years have come from Europe, principally from the Netherlands, France, Germany, and Great Britain.

Among the Europeans who have become interested in Africa, the British and the French have done more than any other nations to develop farming, mining, and stock-raising in that continent. Little by little, through their work in Africa, they have come to control many of the most valuable lands of the continent.

Why Europeans control most of Africa. One reason so much of Africa is under the control of Europeans is that most of the groups of native people are very backward, and they have never learned to make the best use of the lands in which they live. Therefore, when white men from Europe came to Africa and began to develop the farm lands and grazing lands and to open mines and build railroads, it was natural that they should become the rulers of the native peoples.

Getting acquainted with Africa. The British lands in Africa include so much of the continent that you will find it helpful to get better acquainted with Africa as a whole before you study them. The maps on pages 48 and 49 will help you to do this. Before you read further, work out the map studies on page 49.



A
20° Longi B tude
10° West C
0°
D
10° Longi E tude 20° East F from 30° Green G wich 40°
H
50°
J
EUROPE
C. Finisterre
BLACK SEA
CASPIAN SEA
AZORES IS.
ANATOLIA
MEDITERRANEAN SEA
SICILY
CRETE
CYPRUS
Strait of Gibraltar
Algiers
ALGERIA
TUNISIA
C. Bon
Tunis
MADEIRA IS.
Rabat
MOROCCO
ATLAS MTS.
4000 to 14,000 ft.
Gulf of Gabes
Tripoli
Gulf of Sidra
PLATEAU OF BARKA
Alexandria
Nile Delta
Suez Canal
Tigris R.
Euphrates R.
ASIA
Marrakesh
CANARY IS.
LIBYAN LOWLAND
ISTHMUS OF SUEZ
Cairo
SINAI PEN.
Persian Gulf
Wadi Draa
Wadi Saura
Desert el Areg
100 to 500 ft.
Oasis of Siwa
EGYPT
ARABIA
C. Bojador
RIO DE ORO
Igidi Desert
LIBYA
Libyan
Oases of Fezzan
Oases of Kufra
1st Cataract
Aswan
Nile R.
RED SEA
TROPIC OF CANCER
AHAGGAR PLATEAU
Desert
2nd Cataract
Nubian Desert
Cape Blanco
El Juf Desert
Sahara
TIBESTI MTS.
3rd Cataract
4th Cataract
5th Cataract
Atbara R.
CAPE VERDE ISLANDS
Senegal R.
Dakar
Cape Verde
SENEGAL
SAHARA TABLELAND
Timbuktu
600 to 3000 ft.
6th Cataract
Khartum
Str. of Bab el Mandeb
Gulf of Aden
SOKOTRA I.
C. Guardafui
FRENCH WEST AFRICA
Niger R.
Lake Chad
Bahr el Ghazal
ANGLO-EGYPTIAN SUDAN
Blue Nile
Lake Tsana
ETHIOPIAN HIGHLANDS
5,000 to 11,000 ft.
Addis Ababa
KARKAR MTS.
SOMALI PENINSULA
BISSAGOS IS.
SUDAN
Shari R.
EQUATORIAL AFRICA
White Nile
ETHIOPIA
10°
Freetown
SIERRA LEONE
LIBERIA
Monrovia
IVORY COAST
Volta R.
ASHANTI
DAHOMEY
NIGERIA
Lagos
Benue R.
SLAVE COAST
GOLD COAST
Cape Palmas
Niger Delta
Mt. Cameroon 13,353
FERNANDO PO I.
PRINCE'S I.
Bay of Biafra
GULF OF GUINEA
ST. THOMAS I.
ANNOBON I.
C. Lopez
Sanga R.
Ubangi R.
Mbomu R.
Uele R.
Aruwimi R.
Albert L.
UGANDA
Mt. Elgon 13,878
L. Rudolf
KENYA
Juba R.
EQUATOR
CONGO BASIN
1000 to 2000 ft.
Mt. Ruwenzori 16,800
L. Edward
Stanley Falls
Lualaba R.
Lake Victoria
A GROUP OF VOLCANOES
5000 to 19,000 ft.
Mt. Kenya 18,373
Mt. Kilimanjaro 19,456
Mombasa
Ogowe R.
FRENCH
Congo R.
Kasai R.
Brazzaville
Stanley Pool
Leopoldville
BELGIAN CONGO
Tabora
TANGANYIKA
Lake Tanganyika
PEMBA I.
ZANZIBAR I.
Dar es Salaam
MAFIA I.
SEYCHELLES IS.
AMIRANTE IS.
ALDABRA IS.
ASCENSION I.
Loanda
Kwango R.
L. Mweru
Lake Bangweulu
Lake Nyasa
Ruvuma R.
C. Delgado
COMORO ISLANDS
C. Amber
Kwanza R.
ANGOLA
PLATEAUS OF RHODESIA
Kubango R.
Kwando R.
Zambezi R.
MOZAMBIQUE
Mozambique
Mozambique Channel
ST. HELENA I.
Kunene R.
Cape Frio
Victoria Falls
SOUTH AFRICA
3000 to 4000 ft.
MADAGASCAR
CENTRAL PLATEAU 3000 to 4000 ft.
EASTERN HIGHLANDS 5000 ft.
Antananarivo
Sofala Bay
Limpopo R.
SOUTHWEST AFRICA
Walvis Bay
Windhoek
Kalahari Desert
MAURITIUS I.
REUNION I.
TROPIC OF CAPRICORN
C. Corrientes
Johannesburg
Delagoa Bay
Lourenço Marques
C. Ste. Marie
Orange R.
Vaal R.
UNION OF SOUTH AFRICA
Durban
SOUTHERN HIGHLANDS
5000 to 10,000 ft.
Cape Town
Cape of Good Hope
C. Agulhas
Port Elizabeth
ATLANTIC OCEAN
INDIAN OCEAN
C. Hatteras
Mouths of the Amazon R.
C. St. Roque
L. Titicaca
Mt. Aconcagua
Mt. Fuji
Mt. Everest
Ceylon
Samoa Is.
L. Eyre
New Zealand
40°
30°
20°
10°
0°
1
2
3
4
5
6
7
8
Scale of statute miles
0 100 250 500 750 1000 1500
🟩 Lowlands and interior plains
🟧 Old, worn-down mountains
▨ Uplands and plateaus
🟥 Young, rugged mountains
Boundaries of natural regions
Average summit elevations in natural regions indicated thus: 500 to 1000 ft.

AFRICA

PHYSICAL MAP

SHOWING NATURAL REGIONS

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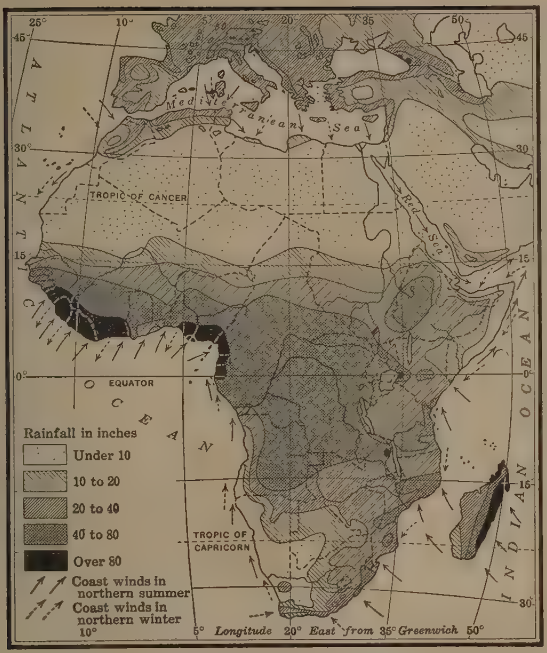

25°
10°
20°
35
50
45
45
ATLANTIC OCEAN
Mediterranean Sea
Red Sea
30
30
TROPIC OF CANCER
15
15
0°
0
EQUATOR
INDIAN OCEAN
15
TROPIC OF CAPRICORN
30
Rainfall in inches
Under 10
10 to 20
20 to 40
40 to 80
Over 80
Coast winds in northern summer
Coast winds in northern winter
10°
5° Longitude 20° East from 35° Greenwich 50°

Figure 41. Distribution of rainfall in Africa.

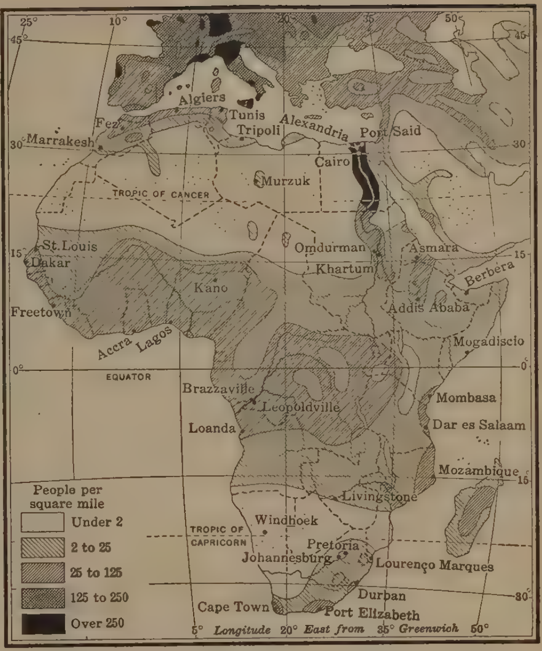

25°
10°
35
50
45
45
Algiers
Tunis
Tripoli
Alexandria
Port Said
Fez
Marrakesh
30
30
Cairo
Murzuk
TROPIC OF CANCER
St. Louis
Dakar
Omdurman
Asmara
Khartum
Berbera
15
15
Kano
Freetown
Addis Ababa
Accra
Lagos
Mogadiscio
0°
0
EQUATOR
Brazzaville
Leopoldville
Mombasa
Loanda
Dar es Salaam
Mozambique
15
Livingstone
People per square mile
Under 2
2 to 25
25 to 125
125 to 250
Over 250
TROPIC OF CAPRICORN
Windhoek
Pretoria
Johannesburg
Lourenço Marques
Durban
30
Cape Town
Port Elizabeth
5° Longitude 20° East from 35° Greenwich 50°

Figure 42. Distribution of people in Africa.

MAP STUDIES

1. On the map opposite this page trace the tropics of Cancer and Capricorn across Africa. 2. Is most of Africa between the tropics, or outside the tropics? 3. What does that tell you about the climate? 4. What parts of Africa do you think are most healthful for white people? Why?

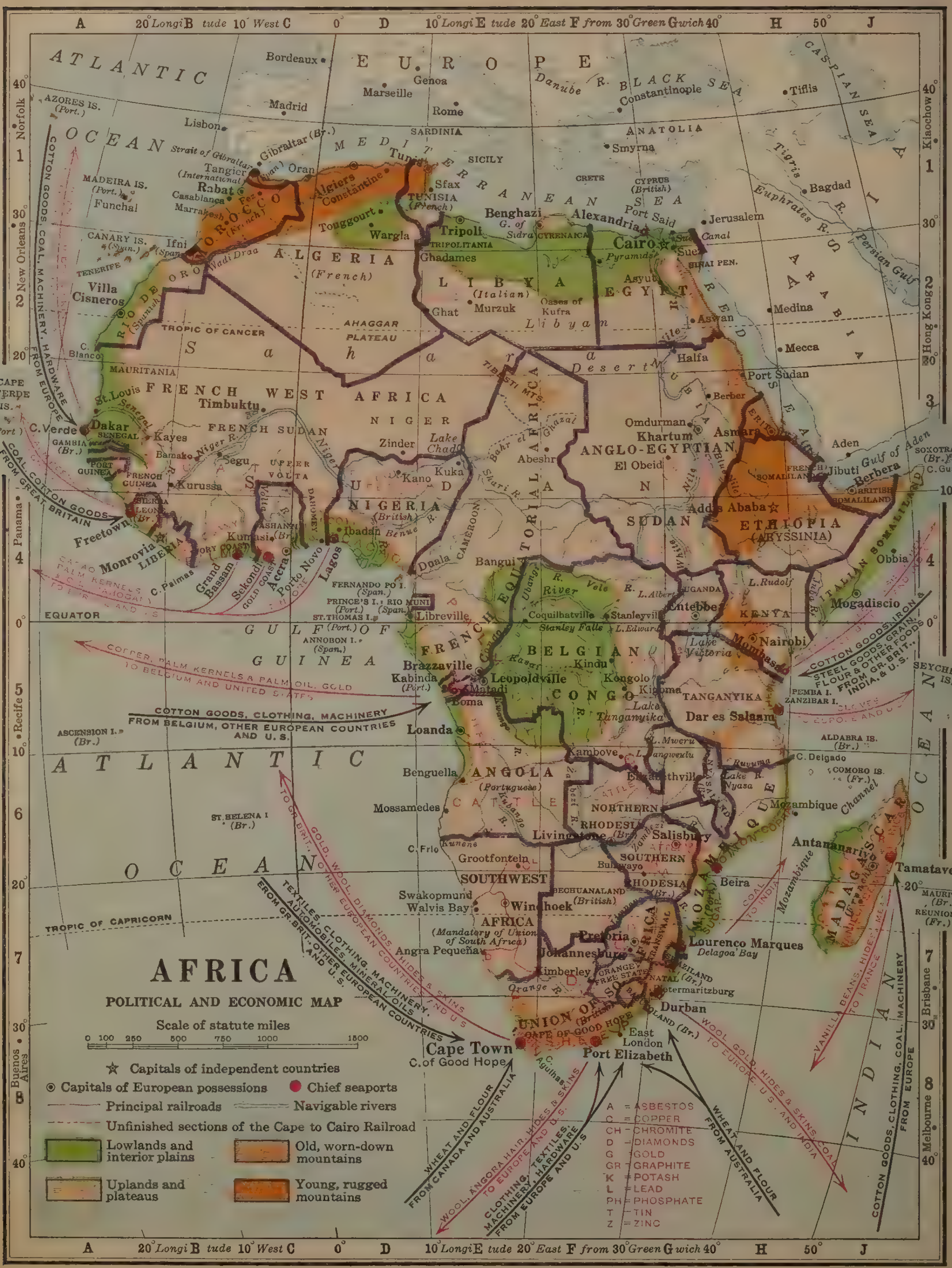
5. Through what large river basin of Africa does the equator pass? 6. From Figure 41 describe the rainfall in the Congo Basin. 7. What kind of forests do you expect to see in that hot, rainy region? Check your answer by the map on page 46.

8. Where in Africa do you find young, rugged mountains? old, worn-down mountains? 9. Find Mount Kilimanjaro, the highest mountain in Africa (*G5*). How high is it? Is there any mountain peak in the United States as high as that? 10. Describe the surface of the land in the greater part of Africa.

11. What does Figure 41 show about the rainfall in the great plateau region of northern Africa? 12. What great desert is located there? 13. Find the Sahara Desert on the map on page 46. 14. How do you account for the oases there? 15. What river valley forms a long, narrow oasis through the eastern part of the Sahara Desert? 16. How does the population of the northern part of that valley compare with the population in the rest of the desert? in the rest of Africa?

17. On the map opposite find the region of northern Africa known as the Sudan. 18. Does it have more rainfall than the Sahara, or less? 19. The Sudan is a *savanna*, or tropical grassland. Turn to the map on page 46 and notice that the tropical forest of the Congo Basin is bordered on the north, east, and south by savannas. 20. In your studies of the Americas where did you find a tropical forest bordered on the north and south by savannas? In the basin of what river is that forest?

21. On Figures 41 and 42 find the part of Africa south of the tropic of Capricorn. 22. What connection can you see between the distribution of rainfall and the distribution of population in that part of the continent?



AFRICA

POLITICAL AND ECONOMIC MAP

Scale of statute miles
0 100 250 500 750 1000 1500
★ Capitals of independent countries
⊙ Capitals of European possessions
● Chief seaports
Principal railroads
Navigable rivers
Unfinished sections of the Cape to Cairo Railroad
Lowlands and interior plains
Old, worn-down mountains
Uplands and plateaus
Young, rugged mountains
A = ASBESTOS
C = COPPER
CH = CHROMITE
D = DIAMONDS
G = GOLD
GR = GRAPHITE
K = POTASH
L = LEAD
PH = PHOSPHATE
T = TIN
Z = ZINC
A 20° Longi B tude 10° West C 0° D 10° Longi E tude 20° East F from 30° Green G wich 40° H 50° J
40° 1 30° 2 20° 3 10° 4 0° 5 10° 6 20° 7 30° 8 40°
Norfolk
New Orleans
Panama
Recife
Buenos Aires
Kiaochow
Hong Kong
Brisbane
Melbourne
ATLANTIC OCEAN
EUROPE
Bordeaux
Madrid
Lisbon
Marseille
Genoa
Rome
SARDINIA
SICILY
Danube R.
BLACK SEA
Constantinople
Tiflis
CASPIAN SEA
ANATOLIA
Smyrna
CRETE
CYPRUS (British)
MEDITERRANEAN SEA
Jerusalem
Tigris R.
Euphrates R.
Bagdad
PERSIA
Persian Gulf
ARABIA
Medina
Mecca
AZORES IS. (Port.)
MADEIRA IS. (Port.)
Funchal
CANARY IS. (Span.)
TENERIFE
Ifni (Span.)
Strait of Gibraltar
Gibraltar (Br.)
Tangier (International)
(Span.)
Oran
Rabat
Fez
Casablanca
Marrakesh
MOROCCO (French)
Algiers
Constantine
Tunis
TUNISIA (French)
Sfax
Touggourt
Wargla
ALGERIA (French)
Wadi Draa
RIO DE ORO (Spanish)
Villa Cisneros
TROPIC OF CANCER
C. Blanco
AHAGGAR PLATEAU
Sahara
Benghazi
G. of Sidra
Tripoli
TRIPOLITANIA
CYRENAICA
Ghadames
Ghat
Murzuk
LIBYA (Italian)
Oases of Kufra
Libyan Desert
Alexandria
Port Said
Cairo
Suez
Canal
Pyramids
SINAI PEN.
Asyut
EGYPT
Aswan
Nile R.
RED SEA
Halfa
Port Sudan
NUBIA
Berber
TIBESTI MTS.
MAURITANIA
St. Louis
Senegal
FRENCH WEST AFRICA
Timbuktu
NIGER
Zinder
CAPE VERDE IS. (Port.)
C. Verde
Dakar
SENEGAL
Kayes
GAMBIA (Br.)
PORT. GUINEA
FRENCH GUINEA
Bamako
Niger R.
Segu
FRENCH SUDAN
UPPER VOLTA
Kurussa
SIERRA LEONE (Br.)
Freetown
Monrovia
LIBERIA
C. Palmas
IVORY COAST
Grand Bassam
Kumasi
ASHANTI (Br.)
GOLD COAST
Sekondi
Accra
Porto Novo
Lagos
DAHOMEY
Ibadan
Kano
NIGERIA (British)
Benue R.
Lake Chad
Kuka
SUDAN
Bahr el Ghazal
Abeshr
Shari R.
FRENCH EQUATORIAL AFRICA
CAMEROON
Duala
Bangui
FERNANDO PO I. (Span.)
PRINCE'S I. (Port.)
RIO MUNI (Span.)
ST. THOMAS I.
Libreville
ANNOBON I. (Span.)
EQUATOR
GULF OF GUINEA
Omdurman
Khartum
ANGLO-EGYPTIAN SUDAN
El Obeid
White Nile
Blue Nile
Asmara
ERITREA
Aden
Gulf of Aden
SOKOTRA I. (Br.)
C. Guardafui
FRENCH SOMALILAND
Jibuti
Berbera
BRITISH SOMALILAND
Addis Ababa
ETHIOPIA (ABYSSINIA)
ITALIAN SOMALILAND
Obbia
L. Rudolf
Juba R.
Mogadiscio
UGANDA
Entebbe
L. Albert
KENYA
Nairobi
Lake Victoria
Mombasa
Ubangi R.
Uele R.
Congo River
Coquilhatville
Stanleyville
Stanley Falls
L. Edward
BELGIAN CONGO
Kasai R.
Kindu
Kongolo
Kigoma
Lake Tanganyika
TANGANYIKA
Dar es Salaam
PEMBA I.
ZANZIBAR I.
SEYCHELLES IS. (Br.)
Brazzaville
Kabinda (Port.)
Leopoldville
Matadi
Boma
Kwango
Loanda
L. Mweru
Kambove
L. Bangweulu
Elizabethville
Ruvuma
C. Delgado
COMORO IS. (Fr.)
ALDABRA IS. (Br.)
Lake Nyasa
NYASALAND
Benguella
ANGOLA (Portuguese)
Kubango R.
Zambezi R.
Mossamedes
CATTLE
NORTHERN RHODESIA (Br.)
Livingstone
Salisbury
MOZAMBIQUE
Mozambique
Mozambique Channel
C. Frio
Kunene
Grootfontein
Bulawayo
SOUTHERN RHODESIA (Br.)
Beira
Antananarivo
MADAGASCAR (Fr.)
Tamatave
MAURITIUS I. (Br.)
REUNION I. (Fr.)
SOUTHWEST AFRICA (Mandatory of Union of South Africa)
Swakopmund
Walvis Bay
Windhoek
BECHUANALAND (British)
TROPIC OF CAPRICORN
Pretoria
TRANSVAAL
Lourenco Marques
Delagoa Bay
Angra Pequeña
Johannesburg
Kimberley
ORANGE FREE STATE
SWAZILAND (Br.)
NATAL
Pietermaritzburg
Orange R.
UNION OF SOUTH AFRICA (British)
CAPE OF GOOD HOPE
Durban
BASUTOLAND (Br.)
East London
Port Elizabeth
Cape Town
C. of Good Hope
C. Agulhas
ASCENSION I. (Br.)
ST. HELENA I. (Br.)
ATLANTIC OCEAN
INDIAN OCEAN
COTTON GOODS, COAL, MACHINERY, HARDWARE FROM EUROPE
COTTON GOODS FROM GREAT BRITAIN
CACAO, PALM KERNELS, MAHOGANY TO G.B. AND U.S.
COPPER, PALM KERNELS & PALM OIL, GOLD TO BELGIUM AND UNITED STATES
COTTON GOODS, CLOTHING, MACHINERY FROM BELGIUM, OTHER EUROPEAN COUNTRIES AND U.S.
GOLD, WOOL, DIAMONDS, HIDES & SKINS TO GR. BRIT., OTHER EUROPEAN COUNTRIES AND U.S.
TEXTILES, CLOTHING, MACHINERY, AUTOMOBILES, MINERAL OILS FROM GR. BRIT., OTHER EUROPEAN COUNTRIES AND U.S.
WHEAT AND FLOUR FROM CANADA AND AUSTRALIA
WOOL, ANGORA HAIR, HIDES & SKINS TO EUROPE AND U.S.
CLOTHING, TEXTILES, MACHINERY, HARDWARE FROM EUROPE AND U.S.
WHEAT AND FLOUR FROM AUSTRALIA
WOOL, GOLD, HIDES & SKINS, COAL TO EUROPE, U.S., AND INDIA
VANILLA, BEANS, HIDES, MEAT TO FRANCE
COTTON GOODS, CLOTHING, COAL, MACHINERY FROM EUROPE
COAL TO INDIA
COTTON GOODS, IRON & STEEL GOODS, GRAIN, FLOUR & OTHER FOODS FROM GR. BRIT., INDIA, & U.S.
CLOVES, COPRA, ...
GOLD, COTTON, COPRA

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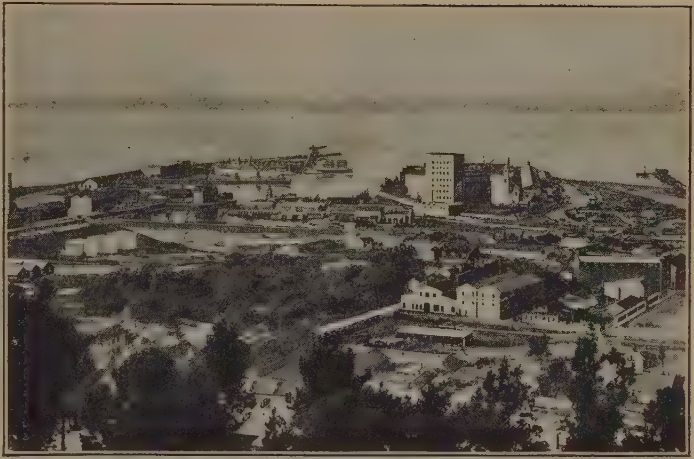
Finding reasons in climate. Give a "climate reason" for each of the following facts:

1. Many of the native peoples of Africa do not like to work hard.
2. The Congo Basin and the other tropical lowlands of Africa are unhealthful for white people.
3. The largest numbers of white people in Africa live north of the tropic of Cancer and south of the tropic of Capricorn.

Something to do. 1. Turn to the map on pages 334–335 and tell what European people first explored the coast of Africa. How does the location of their home country help to explain their explorations along the African coast?

2. Trace the route of Vasco da Gama, the Portuguese sea captain who first found the route around Africa to India in 1497–1498.

3. Study the routes of exploration in southern and central Africa by Livingstone and Stanley. David Livingstone was a Scotchman. Henry M. Stanley was born in Wales, but he lived most of his life in the United States. How many years after Vasco da Gama made his voyage did Livingstone begin his explorations in Africa? Can you think of any reasons why the coasts of Africa were well known long before the interior was explored?



Courtesy of South African Railways and Harbours

Figure 43. Part of the water front at Cape Town, showing some of the wharves and warehouses. Find Cape Town on the map on page 50 (*E 8*). In what part of the Union of South Africa is it located? What reason does the map suggest for the name of this city?

2. The Union of South Africa

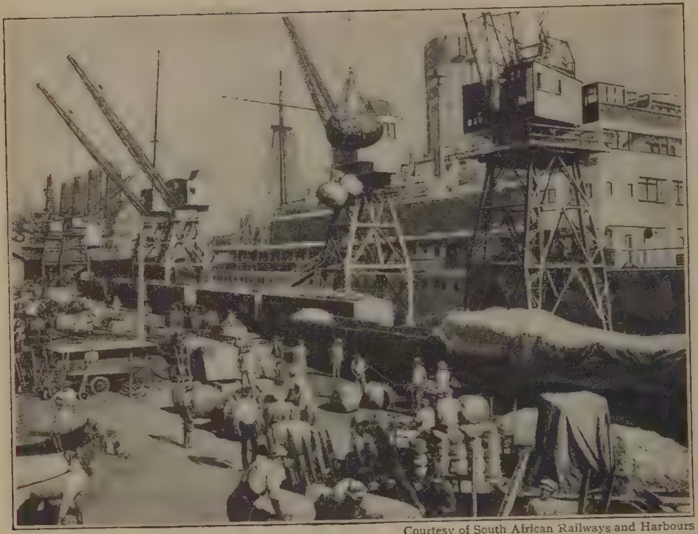
In 1910 four British colonies — Cape of Good Hope, Natal, Transvaal, and Orange River Colony (now called Orange Free State) — united to form the self-governing dominion known as the Union of South Africa. This dominion is about four fifths as large as Alaska and is the most important British possession in Africa. The first European settlers there were Dutch people, and today there are more Boers, or South Africans of Dutch descent, than British people in the Union.

Find the Union of South Africa on the map on page 50 and study its exports and imports. Judging from the exports, what kinds of work do you think are most important in this dominion? Judging from the imports, do you think South Africa is a great manufacturing country? Check your answers to these questions as you study this section.

Map work. On the map of the British Empire which you are making, color the Union of South Africa pink.

An ocean voyage. Almost any week in the year we could leave London on a ship bound for Cape Town, in South Africa. We might make the ocean journey without a stop, or we might go on a ship which stops at Ascension Island and St. Helena Island. Find these islands on the map on page 50 (*B5* and *C6*). They are British islands, and they serve as stations in the south Atlantic Ocean where ships may stop for repairs or to take on supplies of food and coal. They are also radio stations where messages may be received and forwarded through the air.

Cape Town. At the end of a voyage of about twenty-five days our ship will reach Cape Town, and we shall find ourselves in one of the best and most attractive harbors of South Africa. *See Figure 43.*



Courtesy of South African Railways and Harbours

Figure 44. Ships taking on wool and coal at Durban. Find some bales of wool and some coal cars in the picture. What explanation can you give for the fact that Durban, rather than Cape Town, is the chief South African port for trade with India?

Cape Town is the port of South Africa nearest to England, and it is a port of call, or stopping place, for ships sailing back and forth between Australia and the British Isles. Since the greater part of the trade of South Africa is with the home country, Cape Town is the leading seaport. It is also the second city in size in South Africa.

Other gateway cities. Other seaports where we might land in South Africa are Port Elizabeth, East London, and Durban. They are on the southeast coast, and are connected by railroads with Cape Town and with the inland cities. They serve as gateways through which products of some of the mines, ranches, and farms farther inland pass on their way to distant lands. Durban, the largest of the southeastern ports, is an important coaling station for ships, and it exports large quantities of coal to India. Locate Durban on the map on page 50 (*G8*) and find the place where the coal comes from. Then study Figure 44.

Natural regions of South Africa. Turn to the map on page 48 and study the coast of South Africa. Notice that on the east there is a narrow coastal lowland. Notice also that if we travel inland from any one of the seaports of South Africa, we must climb the slopes of an old mountain region. The mountains are much higher than the Appalachian Mountains of our own country, for they rise from 5000 to 10,000 feet above the sea. From their summits the land slopes downward to the interior plateau.

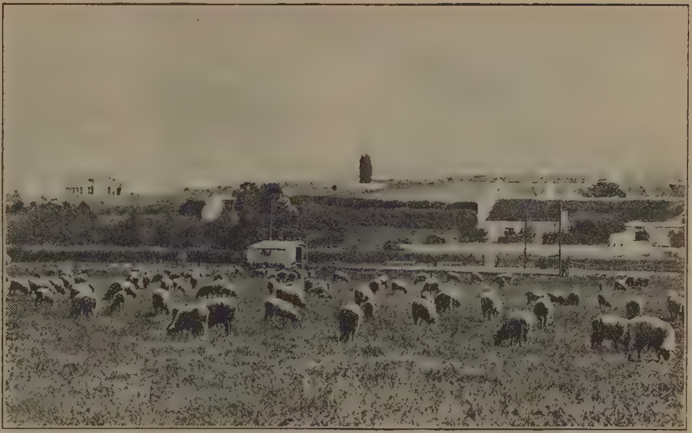
The people of South Africa call the interior plateau the *veld*. When we reach the veld, we shall find ourselves in a gently rolling region from 3000 to 4000 feet above the sea. The highest part is in the east and is called the high veld.

How temperatures differ in the natural regions. The map shows that South Africa is close to the tropic of Capricorn, in the warmest part of the south temperate zone. You will get a good idea of its latitude if you will remember that Durban is about as far south of the tropic of Capricorn as New Orleans is north of the tropic of Cancer. With this in mind, you will not be surprised to learn that the weather is never very cold, even in the winter. What are the winter months in the south temperate zone?

Temperatures differ, however, in the different regions. The eastern coastal lowland is hot in summer and warm in winter, and there is never any frost there. The veld, which is much higher, is warm in summer, but not nearly so hot as the coastal lowland; in winter it is so cool that frosts often occur.

Differences in rainfall. South Africa lies in the belt of the southeast trade winds. When these winds reach the coast of Africa, they are heavily laden with moisture which they have gathered up in blowing over the Indian Ocean. As they rise to cross the mountains, they become cooler and give up much moisture. For this reason there is abundant rainfall on the eastern lowland and on the eastern slopes of the mountains.

By the time the winds have crossed the mountains and begun to move down the western slopes they have lost much of their moisture. Therefore the rainfall on the western slopes and in the high veld is lighter, and it grows less and less as the winds move farther and farther northwest.



Courtesy of South African Railways and Harbours

Figure 45. A sheep ranch in the South African grassland known as the veld. In the veld the rainfall grows less and less from east to west like the rainfall in the interior plains of the United States.

Differences in vegetation. The word *vegetation* means plant and tree growth. When we speak of the *natural vegetation* of a region, we mean the plants and trees that grow without the help of man. When we speak of the *cultivated vegetation,* we mean the plants and trees planted and cared for by the people. As we travel from east to west across South Africa, we shall find that the vegetation changes from region to region because of differences in elevation and rainfall.

The subtropical belt. On the warm, moist eastern lowland the vegetation is subtropical, or almost tropical. Palm trees and wild banana plants grow there, and the people raise sugar cane and other subtropical crops.

The eastern mountain slopes. We shall find that the subtropical vegetation extends inland to an elevation of about 1000 feet. Then, as we begin to climb the mountain slopes, we shall see grasses and bushes of the temperate zone, and on the higher and cooler slopes, above 4000 feet, we shall find temperate forests.

The grassland. When we reach the high veld on the northwestern side of the mountains where the rainfall is lighter, we shall be in a temperate grassland which will remind us of the prairies of our country. There are few trees here except those along the streams and those which have been planted for shade. As you would expect, large numbers of cattle and sheep graze on the natural grasses. *See Figure 45.*

Scrubland and desert. Farther west we pass into a still drier part of the veld, which is called *scrubland.* Here the vegetation is made up of poor grasses and shrubs. Goats graze in this region, but the pasturage is too poor for cattle and sheep. Before we reach the western coast, we find that both plants and animals have disappeared. We are now in a desert where there is too little rain for vegetation of any kind, and bare, rocky hills and sand dunes surround us.

The southwestern corner of Africa. The region around Cape Town, in the southwestern corner of Africa, has quite a different climate from the rest of the Union. In the summer it is hot and dry like the coast farther north. At that time of year the grass is withered by the hot sun and the landscape is brown and dusty. But this part of the con-

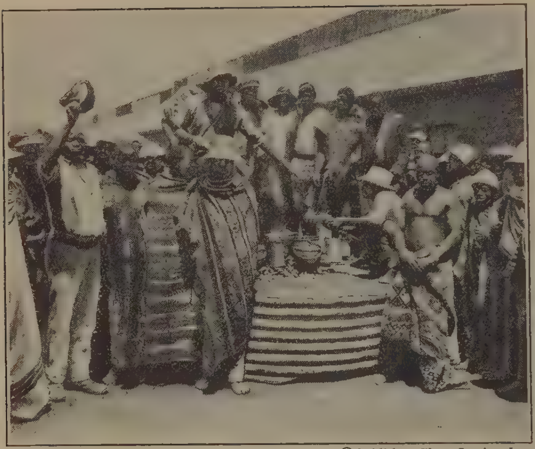


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Figure 46. Lunch time in a diamond compound at Kimberley. The miners are given food and living quarters in the compounds, but they cannot go outside the inclosures while they are working in the mines.

tinent is just far enough south so that during the winter season in the Southern Hemisphere, when all the wind belts move northward, it is in the belt of the westerly winds of that hemisphere. These winds, blowing from the Atlantic Ocean, bring rain. The people are thankful for the winter rains because when they come fresh grass springs up, wild flowers blossom in abundance, and the landscape changes from brown to green.

Proving your acquaintance with South Africa. You are now well enough acquainted with South Africa to complete each of the following sentences correctly:

1. South Africa is in the warmest part of the South Temperate zone.
2. In South Africa winter begins in the month of June and summer begins in the month of December.
3. The eastern coast of South Africa is a moist, subtropical region because Indian Oc.
4. The high veld is a temperate grassland because rain fall lighter.
5. The western part of South Africa is a desert because no [illegible] winds.
6. The southwestern tip of the country has winter rains because westerly winds bring rain.

Mineral Wealth

A great mining country. On the map on page 50 find the places in South Africa where diamonds and gold are mined. The wealth of gold and diamonds taken from the mines in this British dominion has made it one of the great mining countries of the world.

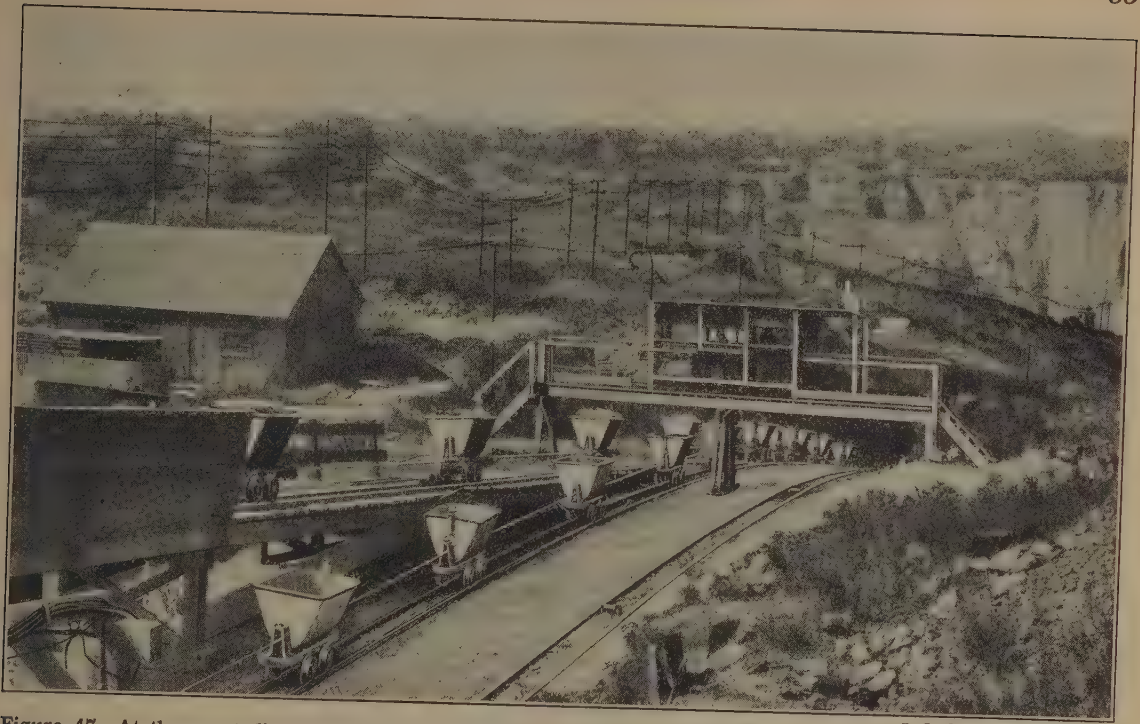
A wonderful discovery. In 1867 a glittering white pebble was found among the playthings of the children of a farmer in the South African veld. A neighbor recognized the stone as a diamond, and it was sold for 500 pounds in English money, or about $2400.

Not long after, someone discovered a place in the veld where the stream gravels contained diamonds. When the discovery became known, thousands of men from all over the world rushed to South Africa and began hunting for the precious stones.

An even greater discovery was made when the miners found the "parent rock" from which the diamonds had been washed by the streams. Today, near the spot where the first diamond mines were located, is the city of Kimberley. Ever since mining began there, South Africa has produced most of the clear, perfect diamonds obtained in the world.

The diamond mines. The diamonds are obtained from rock material mined deep beneath the ground by native workmen. The rock is brought to the surface and spread out on the ground, where it is allowed to lie for a year or more until it decays and crumbles. Then, by washing it, the precious stones are obtained. Most of the rough diamonds are shipped to Europe, where they are cut and polished, and from Europe the polished diamonds are sent to various parts of the world.

The native workmen at the diamond mines are kept in fenced inclosures called *compounds* which are guarded almost like prisons. They are usually engaged for a period of three months, and when they leave they are



De Cou from Ewing Galloway, N.Y.

Figure 47. At the great diamond mine near Pretoria. The cars on the upper track are coming from the mine, loaded with the rock material containing the diamonds. Those on the lower track are "empties" going back into the mine. Huge quantities of rock have to be mined in order to get a few of the precious diamonds.

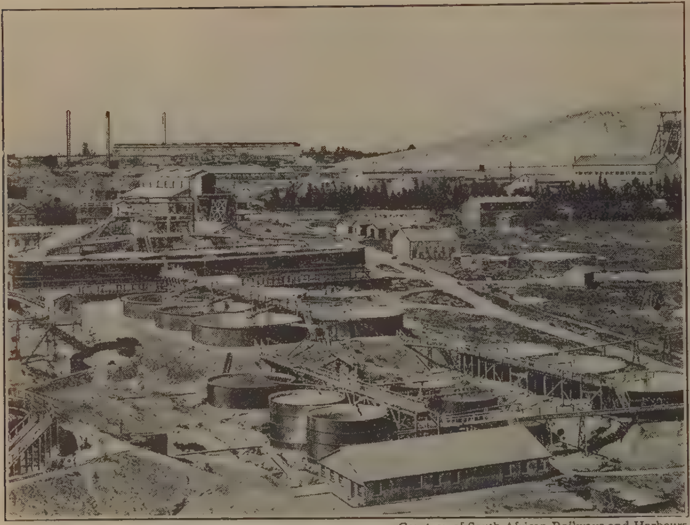
carefully searched to make sure they are not carrying away any diamonds. *See Figure 46.*

There are diamond mines at several other places in the veld besides Kimberley, and the largest single mine is near the city of Pretoria. Find Pretoria and Kimberley on the map on page 50 (*F7*) and study Figure 47.

The gold mines. In 1885 another discovery was made in South Africa, which has meant more to the people than the diamonds. This was the discovery of gold in the high veld near the present city of Johannesburg. That district has become the greatest gold-mining center in the world, and it produces more than half the world's output of gold each year. Valuable as the diamonds are, the gold mined in South Africa is worth three times as much.

The gold comes from deep mines located along a ridge called the "Witwatersrand." This name means a ridge near a stream known as Whitewaters, but the people usually call the gold-mining district simply "the Rand." *See Figure 48.*

Mining and the growth of cities. Since the discovery of diamonds and gold in the high veld, more and more European people have gone to live in that region, and many towns and cities have grown up. Kimberley, as you know, has grown up in the midst of the diamond fields. Pretoria, which is the seat of government of the dominion, has increased its population since the opening of the great diamond mine close by. Johannesburg made its start the year after gold was discovered in the Rand. Today it is the largest city of the Union and the chief railroad center of the high veld.



Courtesy of South African Railways and Harbours

Figure 48. One of the great gold-mining plants near Johannesburg, where the ores are mined and then crushed and treated in various ways to obtain the metal. You can see the mine shaft at the right.

Coal and iron. You already know that coal is mined in the highland region some distance north of Durban, and that some of it is exported. Coal is also mined in the Rand, and is a great help in providing power to run the machinery in the gold mines.

There are large quantities of iron ore in the northeastern part of the country, but as yet the people are not mining it in any large way. In time, however, the abundant supplies of coal and iron ore will probably lead to the growth of an iron-and-steel industry in the Union.

What mining means to the people. Mining is the most important kind of work in South Africa, and it has helped more than anything else to make the people of the Union prosperous. The gold mines and the diamond mines have made many of the white people wealthy, and they provide work for thousands of natives. There are also copper mines in the western part of the Union. Mining also plays a large part in the trade of South Africa, for gold, diamonds, and coal are among the important exports to distant lands.

Farm Lands and Pasture Lands

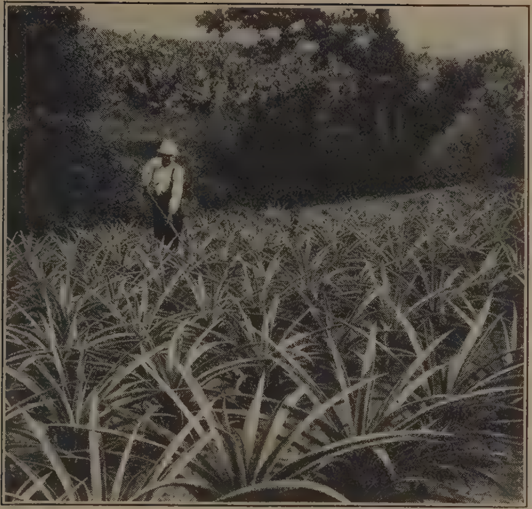
Crops and live stock. Next to mining, the raising of crops and live stock is the most important kind of work in South Africa. From what you have learned about the climate of the country, do you think more land is used for farming or for grazing? Judging from the exports shown on the map on page 50, which kind of work do you think provides more surplus products,— the raising of crops or the raising of live stock?

The South African corn belt. Corn is the chief food of the millions of native people in South Africa, and it is the principal grain crop of the Union. Most of it is raised in the northern, or warmer, part of the high veld, where the summer temperatures and rainfall are much the same as in the western part of our own corn belt. *See Figure 49.*

Nearly every corn-belt farmer of South Africa keeps cattle, which he pastures on the

Courtesy of South African Railways and Harbours

Figure 49. A field of corn in the high veld of the Union of South Africa. This British dominion produces a considerable surplus of corn and is one of the leading corn-exporting countries of the world.



Photograph by Ewing Galloway, N. Y.

Figure 50. A South African farmer at work in his pineapple field. In what tropical possession of the United States are pineapples an important crop?

wild grasses of the veld and fattens for market on corn. Many of the farmers near the large cities have dairy herds, and some of them cut part of their corn while it is green and use it as ensilage, as dairy farmers in our country do.

Other grain crops. The European people of South Africa prefer wheat flour for their bread, just as we do. The wheat fields of the Union are nearly all in the southwestern region, and the wheat is grown during the season of the winter rains and harvested in the early summer. What do you find among the imports of the Union (map, p. 50) which shows that the South Africans do not grow so much wheat as they need?

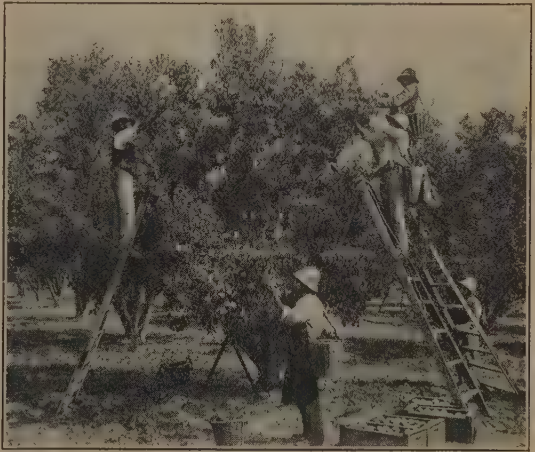
In the drier farm lands the farmers raise Kafir corn, just as farmers in the drier parts of our interior plains do. The natives use Kafir corn for food, and much is also used to feed cattle.

Sugar cane and fruit. On the warm, well-watered lowland bordering the eastern coast, especially near Durban, there are sugar plantations and groves of orange, grapefruit, and lemon trees. You will remember that sugar cane needs a warm, moist climate, and that citrus fruits can be grown successfully only where there is little or no danger of frost. Farther north in the lowland, where the temperatures are still warmer, the people raise bananas, pineapples, and other tropical fruits. *See Figure 50.*

On the high veld, where the temperatures are cooler, there are orchards of apples, pears, and other temperate-zone fruits. In southwestern Africa, near Cape Town, the people raise peaches, citrus fruits, and large quantities of grapes. Some of the grapes are raised to be eaten fresh, some to be dried to make raisins and currants, and some to be used in the making of wine. *See Figure 51.*

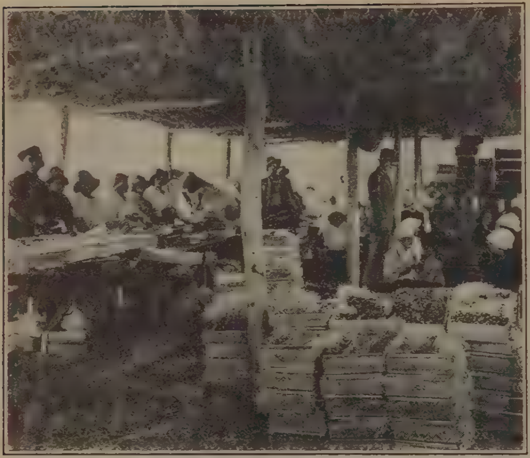
Fruit is becoming more and more important among the products of South Africa. The people eat large quantities themselves, and each year they are exporting more and more fresh fruit, canned and dried fruits, and fruit jam to Great Britain.

The fresh fruit is exported in ships which have cold-storage compartments for it, and it leaves South Africa in the late summer and early autumn of the Southern Hemisphere. Since the seasons are just opposite in the



From Ewing Galloway, N. Y.

Figure 51. Picking peaches in an orchard near Cape Town. Why is this part of South Africa well suited to fruit crops which are likely to be damaged by frost?



Photograph by Publishers Photo Service, Inc.

Figure 52. Packing grapes for export in a vineyard near Cape Town. The grapes are packed with great care so that they will not be damaged on the long ocean voyage to the British Isles.

Northern Hemisphere, it reaches Great Britain when spring is beginning in that country and before there is any fresh fruit from the home orchards. For this reason fresh fruit from South Africa brings high prices in the British markets. *See Figure 52.*

Handicaps to farming. The people of South Africa do not raise many crops in large enough quantities to have a surplus for export, and even the corn and fruit are of small importance in the export trade compared with the products of the mines and grazing lands. South Africa is not a great farming country, and probably never will be, because so much of it has less than 20 inches of rain.

The plateau region provides millions of acres of land level enough for farming, but only in the eastern part is there rain enough for the growth of crops. In the drier crop lands the farmers use dry-farming methods, but as yet few of them irrigate their fields. Therefore, when there is a long drought, or dry period, their crops wither and die.

Considering the handicaps to farming in a large part of South Africa, you will not be surprised to learn that the raising of live stock is more important than the raising of crops.

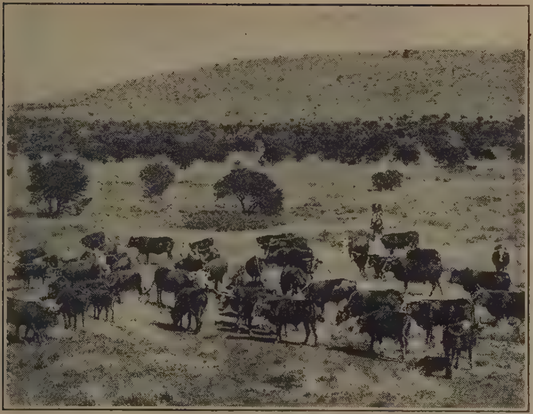
Cattle-raising. Altogether, there are about ten million cattle in the Union. As you would expect, the largest numbers graze on the better pastures of the high veld. The early Dutch settlers raised large numbers of cattle for draft, or work, animals, and many of the Boer farmers still use oxen for plowing and other farm work. Today most of the cattle are raised for beef and dairy products; and as you already know, they are fed partly on corn and other forage crops. *See Figure 53.*

Sheep and goats. The number of sheep in South Africa is about four times the number of cattle. Sheep are found in all but the wettest and driest parts of the Union. You will remember that sheep can graze on pastures that are too dry for cattle. They can also graze on the better pasture lands after the cattle have been there, for they can nibble grass that is too short for cattle to get hold of.

Most of the sheep in South Africa are raised for their wool, and huge quantities of wool are exported each year. There are only five great wool-exporting countries in the world, and South Africa is one of them. The others are Australia, Argentina, New Zealand, and Uruguay.

Goats are also raised in large numbers in South Africa, and many of them graze on pastures that are too poor for sheep. The South African veld has more Angora goats and produces more mohair than any other region in the world. Mohair is the long, fleecy hair of Angora goats. *See Figure 54.*

Special credit work. Imagine that you have gone to South Africa and that for a year you have been in the kind of work that interests you most there. Write a letter to a friend at home, asking him to go into business with you. Tell him just where you are, what kind of work you are doing, and why you think he would like South Africa.



Courtesy of South African Railways and Harbours

Figure 53. Cattle grazing on a ranch in the South African veld. The cattle raised in the Union provide large quantities of hides for export.

Manufacturing and Trade

Advantages for manufacturing. As yet South Africa is not a manufacturing country of any importance, but in recent years the number of industries has been increasing. There is plenty of coal, and the population is growing larger each year, providing greater markets for manufactured goods. What raw materials produced in the Union might be used to build up manufacturing industries?

Exports and imports. From the map on page 50 name the principal exports of South Africa. What two kinds of work in the Union provide a surplus of products for export? To what two classes of goods do the leading imports belong?

The map shows that raw materials from the mines and pasture lands are by far the most important exports. The imports are largely manufactured goods and the kinds of foodstuffs that the people cannot produce in sufficient quantities to supply their needs.

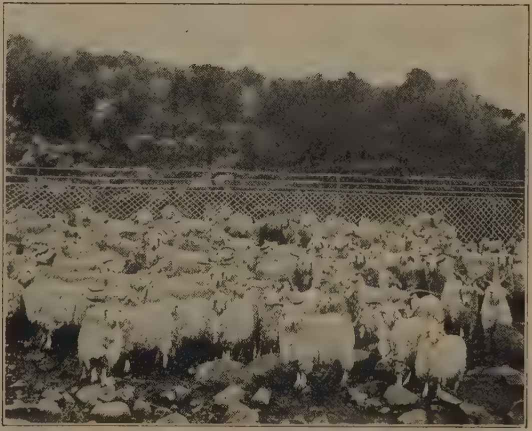
Nearly two thirds of all the exports of South Africa go to Great Britain, and nearly half of all the imports come from there. What reasons can you give for this large trade between the dominion and the home country?

There is a smaller amount of trade of the same kind between South Africa and some of the industrial countries on the continent of Europe. Our own country buys some of South Africa's raw materials, and we help to supply the people of the Union with many kinds of manufactured goods, especially automobiles. We also supply them with much of their gasoline and other mineral oils.

Southwest Africa

A former German colony. On the map on page 50 find Southwest Africa (*E7*). This part of Africa was once a German colony, but after the close of the World War, in 1918, the League of Nations placed its government in the hands of the people of the Union of South Africa. If you do not know what the League of Nations is, appoint a committee to find out and report to the class.

Figure 42 on page 49 will show you that Southwest Africa is thinly populated, and Figure 41 will show you why. Explain the reason. Most of the people are natives, but there are a few Europeans who are interested in mining or in raising live stock. Copper and lead are mined in the northeast, and diamonds are found along the coast in the south.



Courtesy of South African Railways and Harbours

Figure 54. Angora goats in South Africa. The first goats of this kind in the Union were brought from the Plateau of Anatolia in southwestern Asia.

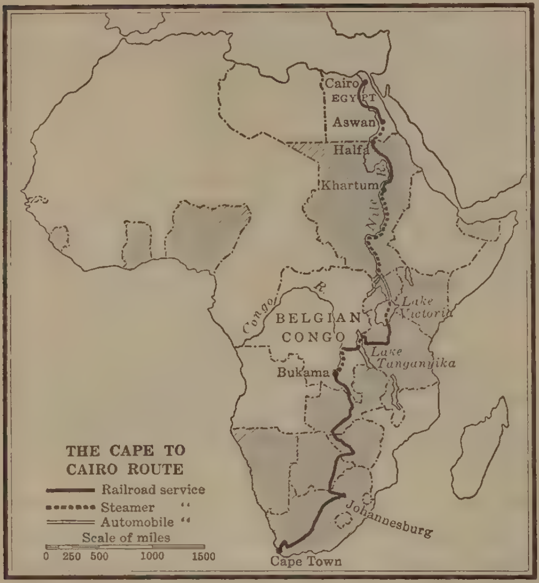


Figure 55. The transcontinental route of travel from Cape Town to Cairo. The shaded areas on the map are the British lands in Africa.

A combination test. This test is a combination of making choices and giving reasons. In each sentence you are to choose the correct word or phrase from those in parentheses and then complete the sentence by giving the reason for the fact which it states.

1. South Africa is not a great (mining) (grazing) (farming) country because rain----.
2. The high veld is a (desert) (grassland) (temperate forest) because light rainfall---.
3. The most important work in the high veld is (mining) (farming) (lumbering) because ---.
4. The eastern coastal lowland has (too little) (plenty of) (too much) rain for farming because ---------South east trade win.
5. The southwestern corner of Africa is suited to the growth of (winter wheat) (corn) (sugar cane) because winter rains----.
6. South Africa is a great (cotton-growing) (wool-producing) (manufacturing) country because ---------raising sheep grass----.
7. Most of the trade of South Africa is with (the United States) (India) (Great Britain) because -----mother country-----------.

3. British Lands in Tropical Africa

The map on pages 42–43 shows that there is an unbroken line of British lands in Africa extending from the Union of South Africa northward to the independent country of Egypt. Name these British lands in order from south to north. In what zone are they? Which one of them borders the Red Sea? What tropical lands bordering the west coast of Africa belong to the British? What British possession is located east of Ethiopia?

Can you suggest reasons why these tropical lands in Africa are of value to the British people? Keep this question in mind as you read about these lands.

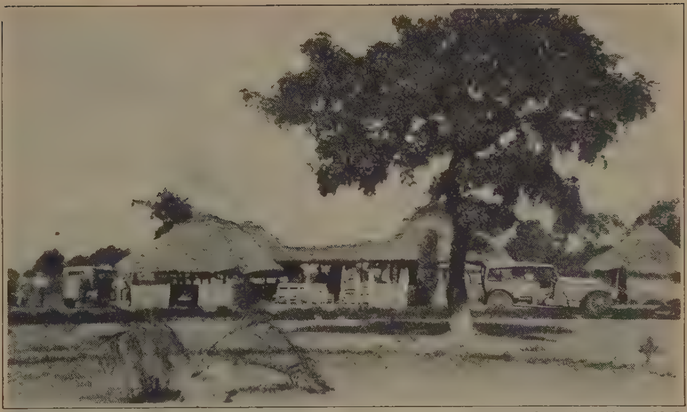
Map work. As you study the tropical possessions of the British in Africa, color them pink on the map of the British Empire which you are making.

The Cape to Cairo Route

A transcontinental route of travel. On the map on page 50 find Cairo, the capital of Egypt (*G1*). From Cape Town we can travel overland to Cairo by what is known as the Cape to Cairo route. It is a long, slow journey, partly by railway, partly by river steamer and lake boat, and partly by road, and it will take us six or seven weeks. Trace the Cape to Cairo route on Figure 55 and show where travel is by railroad, by river steamer on the Congo and the Nile, by lake boat, and by automobile. Notice how much of this transcontinental route passes through British lands. What lands does it pass through which do not belong to the British?

The Cape to Cairo Railway. The British people began to plan the Cape to Cairo Railway many years ago. Figure 55 shows that the southern section of the railway has been completed from Cape Town to Bukama, on the Congo River in Belgian Congo, and the northern section from Khartum to Halfa in Anglo-Egyptian Sudan and from Aswan to Cairo in Egypt. River boats now carry passengers between Aswan and Halfa, but it is probable that this missing link in the railway will soon be built.

Between the northern and southern sections of the Cape to Cairo Railway much railroad-building remains to be done, and it will probably be many years before the work is completed. When that time comes, the transcontinental journey between Cape Town and Cairo will take much less time than it does today. Can you explain why? How will the British possessions in Africa benefit by the completion of the railway?



Courtesy of Joseph T. Singewald, Jr.

Figure 56. A rest camp for people traveling by automobile on the section of the Cape to Cairo route between Lake Victoria and the Nile River. The shelters where people may rest and sleep are built somewhat like the native houses in this part of Africa.

Southern Rhodesia and Northern Rhodesia

The opening-up of Rhodesia. As the British people became interested in developing the resources of South Africa, some of them moved farther north across the Limpopo River and then across the Zambezi River. Find these rivers on the map on page 50.

Among the men who were most interested in this northward movement was Cecil Rhodes. He became a great leader in South Africa, and he did more than anyone else to open up the region north of the Limpopo for British settlement. In time this part of Africa was named Rhodesia in his honor. Rhodesia is now divided into two colonies: Southern Rhodesia and Northern Rhodesia.

From South Africa to Rhodesia. If we travel northward by train from South Africa to Rhodesia, we shall pass through the eastern part of the British protectorate of Bechuanaland. This great stretch of plateau country includes most of the Kalahari Desert; and as you might expect, it is thinly populated. Most of the people are natives, who raise cattle, sheep, and goats. The few Europeans live in the east, near the railroad.

Southern Rhodesia. All Southern Rhodesia lies in the plateau region of southern Africa, in the belt of the southeast trade winds. The greater part of the plateau is over 4000 feet above sea level, but it slopes down to the Limpopo River on the southeast and to the Zambezi River on the northwest.

Although Southern Rhodesia is wholly within the tropics, the greater part of the country has a subtropical climate and is healthful for white people. That is because so much of the plateau is over 4000 feet in elevation.

The rainfall varies from 35 inches in the east to 15 inches in the west, which is enough for the abundant growth of grass in all parts of the country, and some forest growth in the east. Explain why the rainfall grows less from east to west. Southern Rhodesia does not extend far enough west to have any desert lands.

Some wonderful falls. On the map on page 48 find the Victoria Falls in the Zambezi River (*F6*). These falls were discovered by David Livingstone. They are more wonderful than our own Niagara Falls, and thousands of tourists visit them each year. *See Figure 57.*

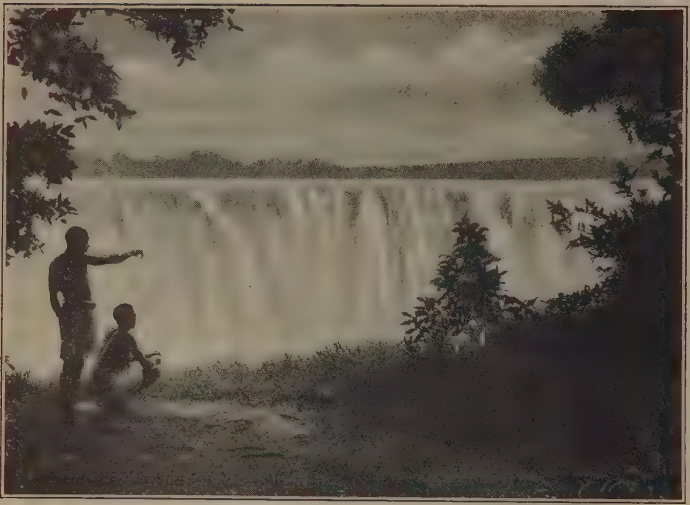


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Figure 57. Victoria Falls. These falls are a mile wide and 360 feet high — more than twice as high as Niagara Falls. Just below the falls the railroad from Cape Town to Bukama crosses the gorge of the Zambezi on a wonderful steel bridge 400 feet above the river.

The people of Rhodesia are planning to use part of the water power at the Victoria Falls to make electricity, just as the people of our country and Canada use part of the water power at Niagara. In what ways will this use of the falls help the people of Rhodesia?

A cattle-and-corn country. Like the high veld in South Africa, Southern Rhodesia is a cattle-and-corn country. It is not, however, a good sheep country, for sheep need a cooler climate to be healthy and to produce thick wool. Cattle-raising is the most important work of the Europeans in Southern Rhodesia and also of the natives. Corn is the most important crop because it is the chief food of the natives and because it is used to fatten cattle and pigs.

Some products of the earth. Turn to the map on page 50 and name the chief mineral products of Southern Rhodesia. This country leads the world in the production of chromite ores, and ranks next to Canada in the production of asbestos. Chromite ores contain a rare mineral called chromium, which is used with iron to make certain very hard kinds of steel. Asbestos, you will remember, is a mineral made up of fine, silky fibers which will not burn and which can be woven into cloth. You may have seen asbestos mats or asbestos packing around steam pipes. What other uses of asbestos can you name?

Of even greater importance than the chromite and the asbestos is the gold which is mined in Southern Rhodesia, and which is by far the most valuable export of the colony.

Trade with distant lands. Since Southern Rhodesia has no seacoast, all its trade with distant lands must be carried on through the ports of neighboring countries with which it is connected by railroads. Some of its trade passes through Cape Town, but much more passes through the port of Beira in the Portuguese colony of Mozambique.

Turn to the map on page 50 and compare the length of the railroad route from Salisbury, the capital of Southern Rhodesia, to Beira with the length of the route to Cape Town. Then explain why the Rhodesians export and import more goods through the Portuguese port than through the British port.

A country which could support more people. Southern Rhodesia is not a densely populated country, and less than one twentieth of the people are Europeans. The Europeans are by no means all British, for many are descendants of Dutch settlers, and others of German and of French settlers. Many more white people could make a living in Southern Rhodesia, for the country is larger than our state of Montana, and there are still large stretches of good land that are not in use. The greatest need is for more roads and railroads to open up more of the land for settlement.

Northern Rhodesia. Northern Rhodesia is a country much like Southern Rhodesia, except that it is somewhat warmer because it is nearer the equator. The southern part is well suited to cattle-raising, and it is believed to have much mineral wealth. At present, however, it is but little developed. The number of Europeans is much smaller than in Southern Rhodesia, and therefore there are fewer ranches, farms, and mines. Turn to the map on page 50 and tell what metal ores are being mined in the colony.

Something to discuss. Discuss the British development of South Africa, Southern Rhodesia, and Northern Rhodesia with your classmates, and try to decide why the greatest progress has been made in South Africa and the least in Northern Rhodesia.

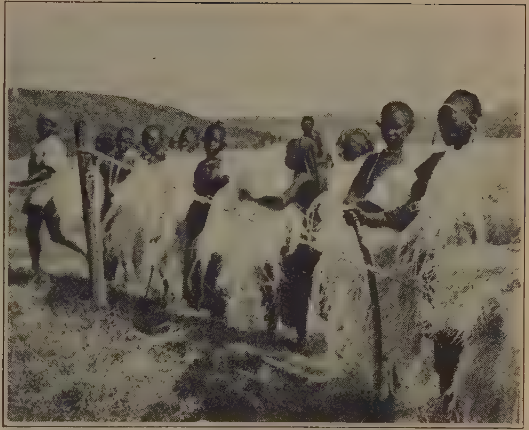
British Lands in East Africa

Lands of the Lake Plateau. On the map on page 50 find Uganda, Kenya, Tanganyika, and Nyasaland. These are the British lands of East Africa. Except for the narrow coastal lowland of eastern Kenya and Tanganyika they are in the plateau of East Africa.

This region of Africa is sometimes called the Plateau of the Great Lakes, or the Lake Plateau. The map on page 50 will show you why. First find Lake Victoria (*G5*). Then find the chain of long, narrow lakes beginning with Lake Albert, northwest of Lake Victoria, and extending in a curve to Lake Nyasa (*G6*). You can see these lakes still more clearly on the relief map on page 46.

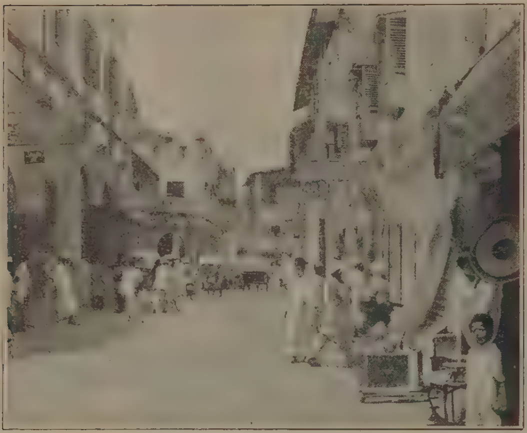
The long, narrow lakes lie in a deep trough called the "rift valley of Africa," and they are among the most beautiful lakes in the world. As you already know, Lake Tanganyika serves as part of the Cape to Cairo route of travel. Lake Victoria is not one of the rift-valley lakes, but it serves in the same way.

The coastal lowland. The coastal lowland of Kenya and Tanganyika is hot and rainy and covered with tropical forests. Its hot, moist climate is unhealthful for white people, and few of them live there. Many of the natives gather coconuts from the coconut palms that grow on the lowland and dry the "meat" to make copra for export, just as the natives of the Philippine Islands do. Others work on plantations where sisal hemp is grown for export. *See Figure 58.*


By Cowling from Ewing Galloway, N.Y.
Figure 58. Natives of East Africa hanging sisal fiber on lines to dry. What country of the Americas produces large quantities of sisal hemp for export?

The plateau lands. Since the plateau lands of East Africa are much higher than the coastal lowland, their climate is much better for white people. They receive less rain than the coastal lowland, and are chiefly grasslands. In the midst of the plateau there is a group of old volcanic mountains which tower above the surrounding lands. Among them is Mount Kilimanjaro, the highest mountain in Africa. Although it is near the equator, its peak is always covered with snow. Why?

Work in the plateau. Many of the natives of the plateau raise cattle, and both the natives and the Europeans raise corn. On many of the native farms and also on plantations owned by white people coffee is grown for export. The leading export crop, however, is cotton, which is raised chiefly by the natives,



Courtesy of Canadian Pacific Steamships

Figure 59. The main street in Zanzibar. Why are the signs printed in English? What suggestions of the tropical climate do you find in the picture?

especially in Uganda. Cotton-growing is being encouraged by the British and is becoming more important each year. Much of the crop is shipped to England. Give a reason for this.

East African ports and their trade. On the map on page 50 find the island of Zanzibar (*G5*). This little tropical island is a British protectorate, and on it is a seaport of the same name. Zanzibar is a great trading center, and one of the chief ports of East Africa. In the harbor you will see ships from many distant lands, and on the streets you will meet merchants from many different countries. *See Figure 59.*

Zanzibar and the neighboring island of Pemba produce most of the world's cloves. Cloves are the dried unopened flower buds of a certain kind of tropical tree.

Other important ports of East Africa are Mombasa, in Kenya, and Dar es Salaam, in Tanganyika. At those ports and at Zanzibar you will see ships unloading manufactured goods and taking on products of the East African farms and plantations. Most of the trade is with Great Britain and India. What East African product do you think the British want the most? Why?

British Lands in the Northeast

Map studies. Before you read further, use the map on page 50 to work out the following map studies.

1. On the map find Anglo-Egyptian Sudan and British Somaliland. 2. What bodies of water border these British lands? 3. What large river flows northward through Anglo-Egyptian Sudan? 4. Judging from this map, what do you think are the most important kinds of work in Anglo-Egyptian Sudan? 5. What do the people raise that might be sold in Lancashire, England?

6. What canal connects the northern end of the Red Sea with the western end of the Mediterranean? 7. Turn to the map on pages 338–339 and decide whether this canal is important to the British people in carrying on trade with Australia, New Zealand, and the parts of the empire in Asia and eastern Africa.

The Suez Canal. The Suez Canal, which you have located on the map, is about 100 miles long, and it has no locks because it was cut through very low land. It was opened in 1869, and is of great commercial importance because it provides a water route from western Europe to eastern Africa, Asia, and Australia several thousand miles shorter than the route around the southern tip of Africa. The canal is in Egypt, but it is controlled by the British and guarded by British troops. Can you think of reasons why it is of special advantage to Great Britain to control this very important waterway for ships?

The British allow the ships of all nations to pass through the Suez Canal in times of peace, just as our country allows the ships of all nations to use the Panama Canal. The ships pay certain charges for going through, and the money is used to keep the canal in good condition. *See Figure 60.*

British Somaliland. This part of Africa is a very dry land with few people, but there is an advantage to the British people in holding it. It lies opposite Aden, one of the

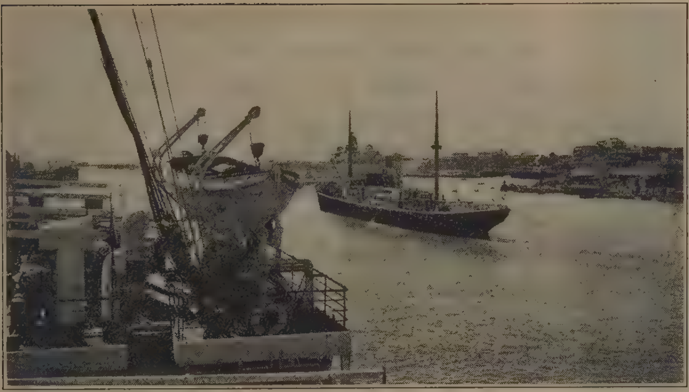


Figure 60. The northern entrance to the Suez Canal at Port Said, in Egypt. More than half of all the ships which pass through this canal each year are British. Can you explain why?

British possessions in southwestern Asia, and its position helps the British to control the southern entrance to the Red Sea.

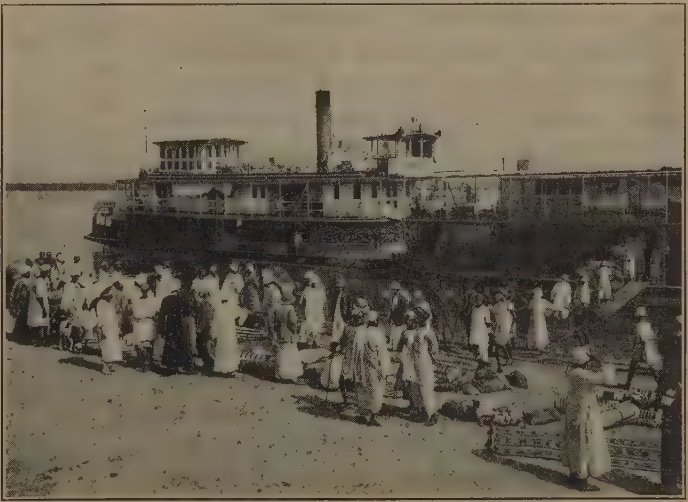
Anglo-Egyptian Sudan. As you may guess from its name, the southern portion of this country lies in the part of Africa known as the Sudan, where there is enough rain for the growth of grass. The northern portion is part of the Sahara Desert.

Figure 42 on page 49 shows that most of the people of this British land live in a belt bordering both sides of the Nile River. Turn to the map on page 50 and find Khartum (*G3*). Notice that it is located at the junction of the two main branches of the Nile. The Blue Nile comes from the well-watered Ethiopian Highlands, and the White Nile rises in a rainy part of Africa near the equator. Both branches provide abundant water for irrigation along their banks. You will learn more about the use of the Nile for irrigation when you visit Egypt.

The people of Anglo-Egyptian Sudan raise much cotton on their irrigated lands, and cotton is the chief export. The fiber is separated from the seeds in gins imported from England, and is sent by train to Port Sudan, on the Red Sea, for shipment to Liverpool.

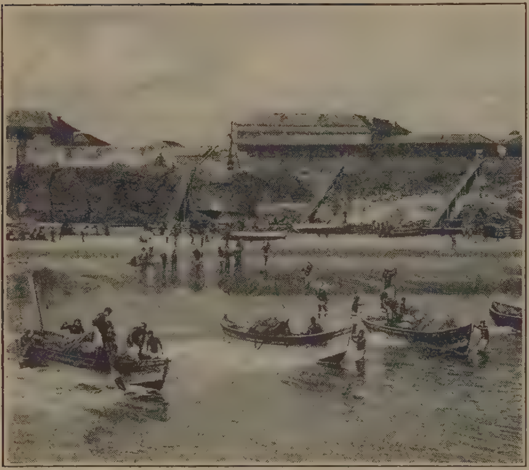
The people raise also large quantities of a grain called millet, and various other food crops. In the southern grasslands many of the natives raise cattle, sheep, and goats and prepare the hides and skins for export to Europe. Wild elephants roam the southern grasslands and are hunted by the natives, who eat the meat and sell the ivory tusks to traders for export.

With its irrigated lands for farming and its large areas of grasslands for the raising of stock, Anglo-Egyptian Sudan can produce much greater quantities of raw materials and foodstuffs than it does today, and many people believe that as more Europeans go to make their homes there it will become one of the most important countries of Africa.



By Cowling from Ewing Galloway, N.Y.

Figure 61. River steamers at Khartum. How can you tell from the map on page 50 that these boats must have come from the south? Why is Khartum one of the more important ports on the Nile?



From Ewing Galloway, N.Y.

Figure 62. Boats loaded with cacao for export from the Gold Coast. The harbors are so shallow that ocean ships anchor off shore, and cargoes are carried to and from them in small boats of this kind.

Khartum is the capital of the country and has the largest European population of any of the towns and cities. Omdurman, just across the Nile from Khartum, is the old native capital and has the largest native population. *See Figure 61.*

The West Coast Possessions

Locating the British lands in West Africa. On the map on page 50 find Gambia (*B3*), Sierra Leone (*B4*), Gold Coast and Ashanti (*C4*), and Nigeria (*D4*). Which of these British possessions in West Africa is the largest?

The tropical coast. The west coast of Africa, from Gambia to the mouth of the Congo River, is one of the hottest and rainiest parts of the continent. From Figure 41 on page 49 tell how much rain falls along the coast of the Gulf of Guinea. Because of the heat and moisture the climate is very unhealthful for white people, and the few white people who live on the coastal lowlands are mostly traders.

The natives carry on farming in a simple way to supply themselves with food, and some of them raise cacao for export. You will remember that we visited cacao plantations in tropical South America and learned how the people remove the "beans" from the seed pods and prepare them for export.

The natives also gather the fruit of the oil palms which grow wild in the tropical forests of this hot, rainy coast. The pulp and the kernels, or seeds, of this fruit provide palm oil, which is used in large quantities in Europe and the United States for making soap and for other purposes. Both the kernels and the oil are exported from West Africa.

The savannas. Farther inland, where the land is higher and the rainfall less, the forests give way to the savannas of the Sudan. The northern half of Ashanti and the greater part of Nigeria are in the Sudan. The natives of these tropical grasslands carry on farming and raise many cattle. Their principal export crop is peanuts, which are sent to Great Britain and other European countries for use in making vegetable oil.

In Nigeria the natives have long raised cotton and woven coarse cotton cloth for clothing. The British government is encouraging them to raise more and better cotton, and small quantities of this raw material are now being exported to England. Another important product of Nigeria is tin. The mines are under the control of the government, and the ore is exported to Wales.

West African trade. About three fourths of all the trade of the British possessions in West Africa is with the home country. In exchange for cacao, palm kernels, peanuts, tin, and other products which they get from these possessions the British send cheap cotton goods for clothing for the natives, machinery and small tools, and a few other kinds of manufactured goods. *See Figure 62.*

Special credit work. Find out who built the Suez Canal and why it was easier to build than the Panama Canal.

A check. Turn to Figure 55 on page 60 and see if you can name correctly all the British possessions in Africa. If you have any trouble doing so, you need to study the map on pages 42–43 again.

An identification test. After your study of the British lands in Africa you should be able to tell what each phrase below describes.

1. The cape at the southern tip of Africa. Good Hope
2. The city which is the greatest gold-mining center in the world. Johannesburg
3. The highest mountain in Africa. Kilimanjaro
4. The canal in Egypt controlled by the British. Suez
5. The city which is the center of the oldest diamond-mining district of Africa.
6. The falls in Africa which are greater than Niagara. Victoria
7. The river in which these falls are located. Zambezi
8. The capital of Anglo-Egyptian Sudan. Khartoum
9. The transcontinental route of travel from northern Africa to southern Africa. Cape to Cairo
10. Two lakes which serve as part of this transcontinental route. Tanganyika Victoria
11. The great desert in northern Africa. S
12. The people of Dutch descent in South Africa. Boers
13. The river which forms part of the northern section of the Cape to Cairo route. Nile
14. The tropical grassland south of the Sahara Desert. Anglo-Egyptian Sudan
15. The river which forms part of the central section of the Cape to Cairo route. Congo
16. The interior plateau of South Africa. veld

Finding reminders. Tell where a person from each of the following places in the Americas would find a place in the British lands in Africa to remind him of home.

1. The corn belt of the United States. Rhodesia
2. A sheep ranch in Argentina. Ke
3. A gold-mining center in Colorado.
4. The cotton belt of the United States.
5. A coffee plantation in Brazil.
6. A tin-mining camp in Bolivia.
7. A cacao plantation in Ecuador.
8. A sisal-hemp plantation in Yucatan.

3

Giving reasons. Complete each sentence below by giving reasons for the fact which it states.

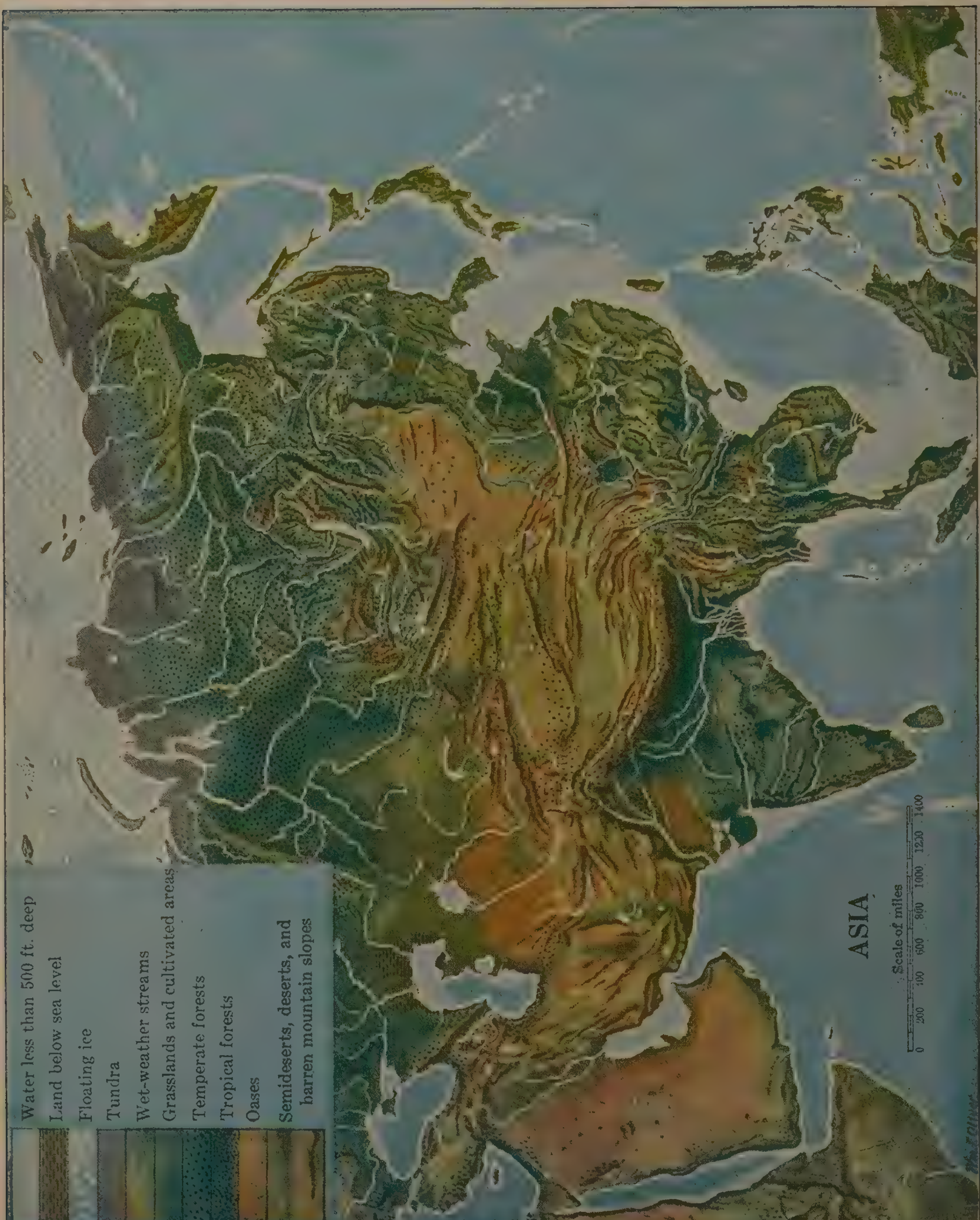
1. Of all the British possessions in Africa the Union of South Africa is the one which has attracted the most white people because ------- --------------------------------------.
2. In time Anglo-Egyptian Sudan will probably be of much greater value to the British than it is today because ------------------.
3. The British are encouraging cotton-growing in Uganda, Anglo-Egyptian Sudan, and Nigeria because ------------------------------------.
4. The British are interested in mining the tin of Nigeria because ---------------------.
5. The greater part of the wool exported from South Africa goes to England because -------- --------------------------------------.
6. Fresh fruit from South Africa finds ready markets in Great Britain because ----------- --------------------------------------.
7. Although the British possessions in East Africa are within the tropics, they are fairly well suited to settlement by white people because --------------------------------------.
8. Although British Somaliland is thinly populated, it is of value to the British people because -----------------------------------.
9. The British possessions in Africa provide good markets for British manufactures because --------------------------------------.

Getting cargoes. Name one or more ports of the British lands in Africa where a British ship might go to get each of the following products. You may use the map on page 50 for this work if you find it necessary.

- tin
- coal
- wool
- cloves
- cotton
- cacao
- coffee
- mohair
- sisal hemp
- palm kernels
- hides and skins
- gold and diamonds

Special credit work. 1. Find a book which tells about Cecil Rhodes and his work in South Africa, and make a report to your class.

2. Find out what the Rhodes scholarships are and what a boy must do to win one.


ASIA
Scale of miles
0 200 400 600 800 1000 1200 1400
Water less than 500 ft. deep
Land below sea level
Floating ice
Tundra
Wet-weather streams
Grasslands and cultivated areas
Temperate forests
Tropical forests
Oases
Semideserts, deserts, and barren mountain slopes

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IV. BRITISH LANDS IN ASIA

Foreword. Nearly half of all the people in the world live in Asia, and of all the people in that great continent about one third live in India and other lands which are parts of the British Empire. The natives of these British lands are not people of the black race, like the negroes of Africa. Most of them are brown-skinned people, but the various groups differ from one another in race, religion, and customs.

The British have done much to help the native people of these Asiatic lands. They have made living conditions more healthful for them, and they have taught them better ways of farming and doing other kinds of work. They have also built roads and railroads, improved the harbors, and developed foreign trade, giving the natives a better chance to market their surplus products in distant lands.

As you read this chapter, try to find out why the British became interested in the lands of Asia, and why these lands are valuable parts of the British Empire.

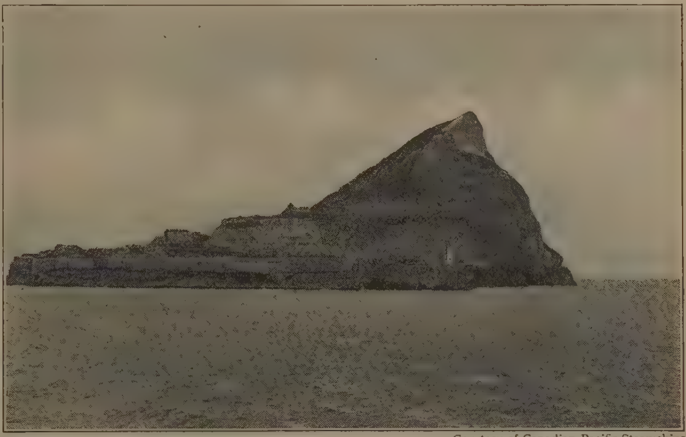
Getting acquainted with Asia. Before you visit the British lands in Asia, you will find it helpful to get somewhat better acquainted with the continent as a whole. First study the colored relief map opposite this page. Find (1) the parts of Asia which have too little rain for farming; (2) the parts where there are extensive grasslands and cultivated areas; (3) the part with the greatest stretches of temperate forests; (4) the cold, frozen part known as the *tundra*.

Now work out the map studies on page 71.

Map work. After you have finished the map studies, color the British lands in Asia pink on the map of the British Empire which you are making. Use the map on pages 42–43 as a help.

1. A VOYAGE TO INDIA

We are going to board a steamship at London and travel by way of the Suez Canal to India. This is the route most commonly followed by ships going from western Europe to seaports of Asia, Australia, and New Zealand. Trace it on the map on pages 42–43. Point to the places along this important trade route where we may expect to see British flags flying.



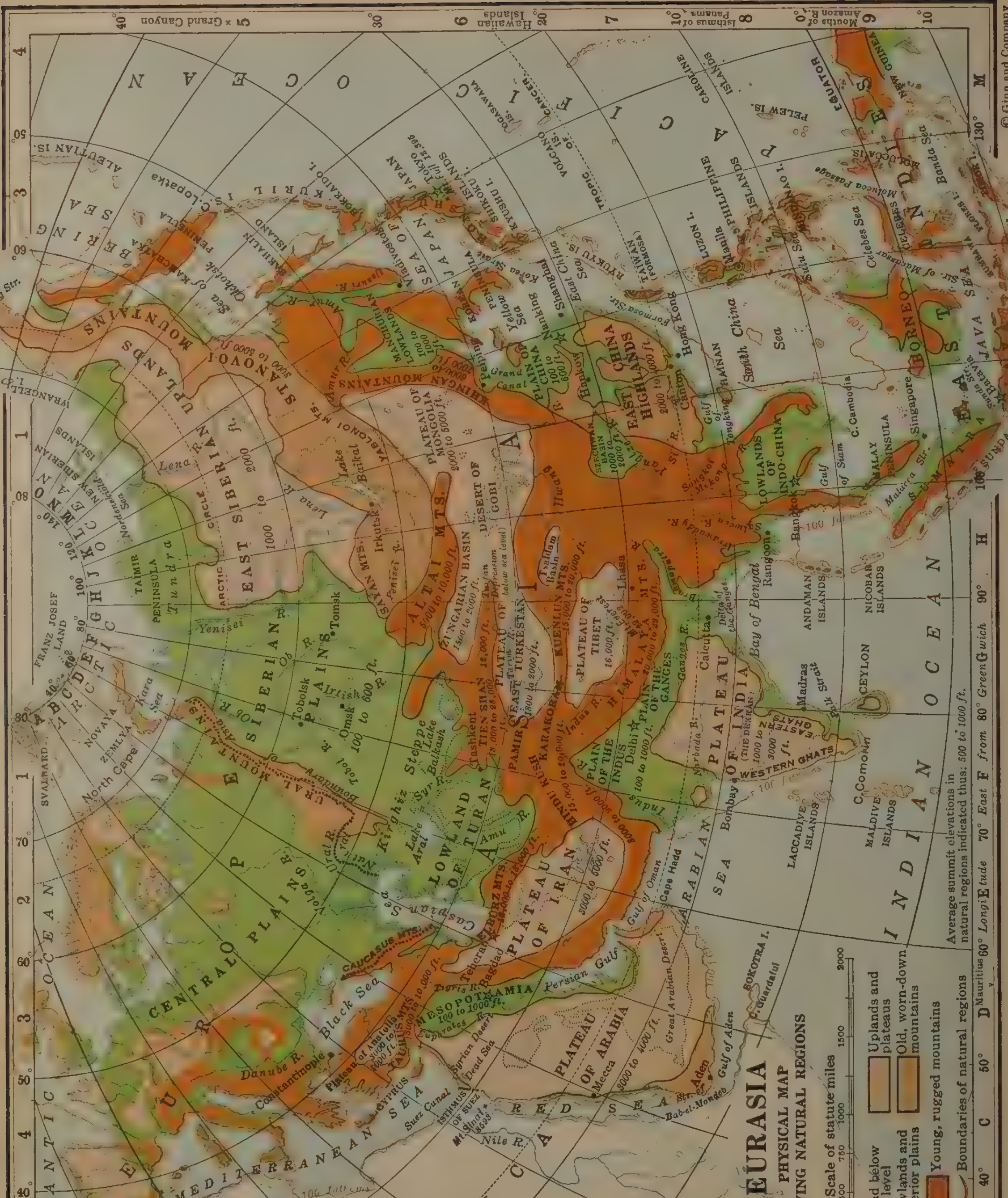
Courtesy of Canadian Pacific Steamships

Figure 63. The Rock of Gibraltar, as it looks from ships passing eastward through the strait. The port of Gibraltar, on the lower land back of the Rock, is an important coaling station for ships.

Gibraltar. We enter the Mediterranean Sea through the Strait of Gibraltar, which is about 8 miles wide at its narrowest point. What two continents are separated by this narrow strait? What European country lies on the northern side of the strait?

On the north, which is to our left as we pass eastward through the strait, is the Rock of Gibraltar, shown in Figure 63. There we see British flags, which tell us that the Rock of Gibraltar belongs to Great Britain, instead of to Spain, as we might easily suppose. This huge rock has been made into a fortress which gives the British control of the western gateway to the Mediterranean.

Turn over to page 72.


EURASIA
PHYSICAL MAP
SHOWING NATURAL REGIONS
Scale of statute miles
0 100 300 500 750 1000 1500 2000
Land below sea level
Lowlands and interior plains
Uplands and plateaus
Old, worn-down mountains
Young, rugged mountains
Boundaries of natural regions
Average summit elevations in natural regions indicated thus: 500 to 1000 ft.
70° East 80° from Greenwich 90°
Longitude
© Ginn and Company
ATLANTIC OCEAN
ARCTIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
MEDITERRANEAN SEA
AFRICA
EUROPE
ASIA
EAST INDIES
CENTRAL PLAINS
URAL MOUNTAINS
CAUCASUS MTS.
Black Sea
Caspian Sea
Danube R.
Volga R.
Ural R.
Constantinople
Strait of Gibraltar
CYPRUS
Suez Canal
ISTHMUS OF SUEZ
Mt. Sinai 8598
Dead Sea
Syrian Desert
Nile R.
RED SEA
Str. of Bab-el-Mandeb
Gulf of Aden
Aden
Mecca
PLATEAU OF ARABIA 3000 to 4000 ft.
Great Arabian Desert
SOKOTRA I.
C. Guardafui
Plateau of Anatolia 3000 to 5000 ft.
TAURUS MTS. 5000 to 10,000 ft.
MESOPOTAMIA 100 to 1000 ft.
Tigris R.
Euphrates R.
Bagdad
Teheran
ELBURZ MTS. 10,000 to 18,000 ft.
PLATEAU OF IRAN 3000 to 6000 ft.
Persian Gulf
Gulf of Oman
Cape Hadd
ARABIAN SEA
LOWLAND OF TURAN
Lake Aral
Amu R.
Syr R.
Kirghiz Steppe
Lake Balkash
Tashkent
WEST SIBERIAN PLAINS 100 to 600 ft.
Ob R.
Irtish R.
Tobolsk
Omsk
Tomsk
Yenisei R.
Tundra
TAIMIR PENINSULA
NOVAYA ZEMLYA
Kara Sea
North Cape
SVALBARD
FRANZ JOSEF LAND
NEW SIBERIAN ISLANDS
Nordenskiold Sea
ARCTIC CIRCLE
EAST SIBERIAN UPLANDS 1000 to 2000 ft.
Lena R.
STANOVOI MOUNTAINS 3000 to 6000 ft.
Sea of Okhotsk
KAMCHATKA PENINSULA
C. Lopatka
BERING SEA
Bering Str.
C. Dezhnev
WRANGELL I.
ALEUTIAN IS.
KURIL IS.
SAKHALIN ISLAND
HOKKAIDO I.
Amur R.
Ussuri R.
YABLONOI MTS.
Lake Baikal
Irkutsk
SAYAN MTS.
ALTAI MTS. 5000 to 10,000 ft.
ZUNGARIAN BASIN 1500 to 2000 ft.
TIEN SHAN 15,000 to 23,000 ft.
PLATEAU OF EAST TURKESTAN 1800 to 2000 ft.
Tarim R.
Turfan Depression (below sea level)
DESERT OF GOBI
PLATEAU OF MONGOLIA 2000 to 5000 ft.
KHINGAN MOUNTAINS 3000 to 6000 ft.
MANCHURIAN LOWLANDS 100 to 1000 ft.
Vladivostok
KOREAN PENINSULA
Korea Strait
SEA OF JAPAN
JAPAN
HONSHU
KYUSHU I.
SHIKOKU I.
Tokyo
Mt. Fuji 12,395
Peiping
Grand Canal
Yellow Sea
PLAIN OF CHINA 100 to 600 ft.
Nanking
Shanghai
East China Sea
RYUKYU IS.
TAIWAN (FORMOSA)
Formosa Str.
Hwang R.
Yangtze R.
Hankow
SZECHWAN BASIN 1000 to 2000 ft.
EAST CHINA HIGHLANDS 2000 to 4000 ft.
Si R.
Canton
Hong Kong
HAINAN
Gulf of Tongking
South China Sea
PAMIRS
HINDU KUSH 12,000 to 20,000 ft.
KARAKORAM
KUENLUN MTS. 15,000 to 20,000 ft.
Tsaidam Basin
PLATEAU OF TIBET 16,000 ft.
Lhasa
Mt. Everest
HIMALAYA MTS. 20,000 to 29,000 ft.
Brahmaputra R.
Indus R.
PLAIN OF THE INDUS 100 to 1000 ft.
Delhi
PLAIN OF THE GANGES
Ganges R.
Calcutta
Delta of the Ganges
PLATEAU OF INDIA (THE DECCAN) 1000 to 3000 ft.
Narbada R.
Bombay
WESTERN GHATS
EASTERN GHATS
Madras
Palk Strait
CEYLON
C. Comorin
LACCADIVE ISLANDS
MALDIVE ISLANDS
Bay of Bengal
ANDAMAN ISLANDS
NICOBAR ISLANDS
Rangoon
Irrawaddy R.
Salween R.
Mekong R.
Songkoi R.
LOWLANDS OF INDO-CHINA
Bangkok
Gulf of Siam
C. Cambodia
MALAY PENINSULA
Malacca Str.
Singapore
SUMATRA
JAVA
Batavia
Sunda Str.
JAVA SEA
BORNEO
SUNDA ISLANDS
Str. of Macassar
Celebes Sea
CELEBES
Sulu Sea
Flores I.
TIMOR I.
Banda Sea
MOLUCCAS IS.
Molucca Passage
NEW GUINEA
PHILIPPINE ISLANDS
LUZON I.
Manila
MINDANAO I.
PELEW IS.
CAROLINE ISLANDS
EQUATOR
TROPIC OF CANCER
VOLCANO IS.
OGASAWARA IS.
Mauritius
Grand Canyon
Hawaiian Islands
Isthmus of Panama
Mouths of Amazon R.
Cape Verde
Mouths of Niger R.
Mouths of Congo R.
A B C D E F G H I J K L M

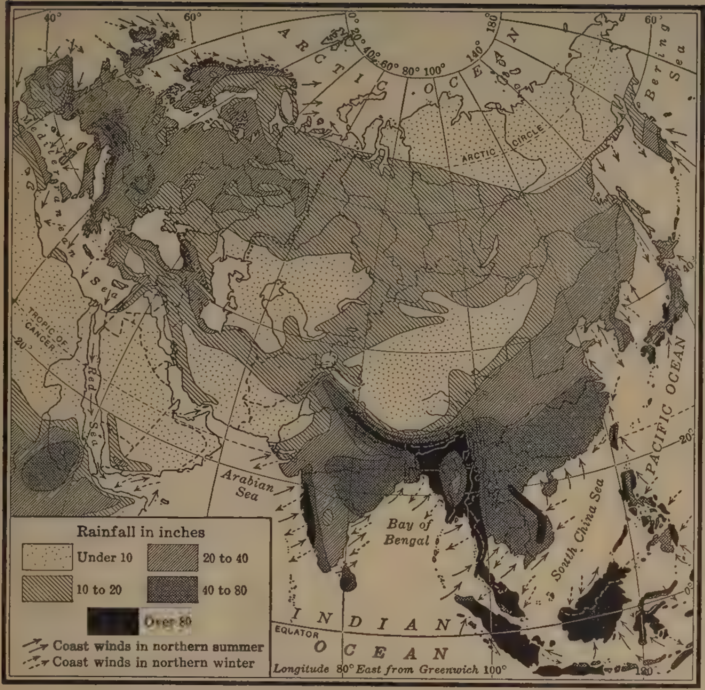

Rainfall in inches
Under 10
10 to 20
20 to 40
40 to 80
Over 80
Coast winds in northern summer
Coast winds in northern winter
ARCTIC OCEAN
ARCTIC CIRCLE
Bering Sea
PACIFIC OCEAN
South China Sea
Bay of Bengal
Arabian Sea
INDIAN OCEAN
Red Sea
TROPIC OF CANCER
EQUATOR
Longitude 80° East from Greenwich 100°

Figure 64. Distribution of rainfall in Eurasia.

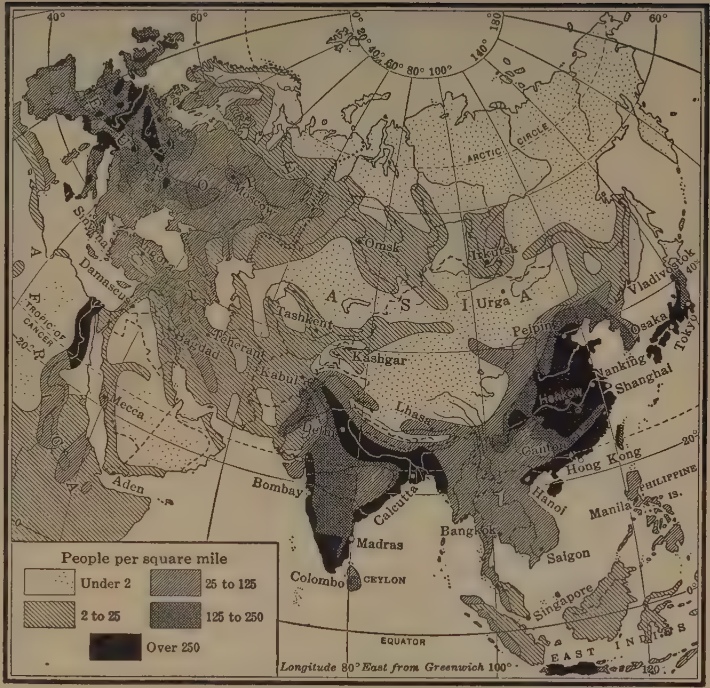

People per square mile
Under 2
2 to 25
25 to 125
125 to 250
Over 250
ASIA
Moscow
Omsk
Irkutsk
Urga
Vladivostok
Peiping
Osaka
Tokyo
Nanking
Shanghai
Hankow
Canton
Hong Kong
Manila
PHILIPPINE IS.
Hanoi
Saigon
Bangkok
Singapore
EAST INDIES
Lhasa
Kashgar
Tashkent
Teheran
Bagdad
Kabul
Delhi
Calcutta
Madras
Bombay
Colombo
CEYLON
Aden
Mecca
Damascus
Smyrna
TROPIC OF CANCER
EQUATOR
ARCTIC CIRCLE
Longitude 80° East from Greenwich 100°

Figure 65. Distribution of people in Eurasia.

MAP STUDIES

ral
aucasus
iberian →
North →
Turan →
less People
less rain —
7

1. What mountain ranges, river, and inland sea form the natural boundary between Europe and Asia? 2. What plains lie east of the Ural Mountains? 3. In what direction do the rivers of those plains flow? 4. What lowland lies east of the Caspian Sea? 5. How do these Asiatic plains compare in density of population with the Central Plains of Europe? 6. What reason for this difference does Figure 64 suggest?

7. Find the plateaus of Arabia, Iran, and India on the physical map and on the rainfall map. 8. Which of these plateaus do you expect to find densely populated? Why? Check your answer by Figure 65. 9. On the physical map find the Indus and Ganges rivers in India and name the mountains in which they rise. These are the highest mountains in the world. What kind of mountains are they? 10. Name the highest peak in the Himalayas and give its elevation.

Mt. Everest

11. Describe the surface of the part of Asia which stretches northeastward from the Himalaya Mountains to Bering Sea. 12. Give two reasons why this part of Asia is thinly populated. 13. What part of eastern Asia is as densely populated as India? 14. What reason can you give for the many people there? 15. Is Asia mostly a continent of lowland plains or of mountains and plateaus? 16. Do most of the people live in the cooler part of the continent or the warmer part?

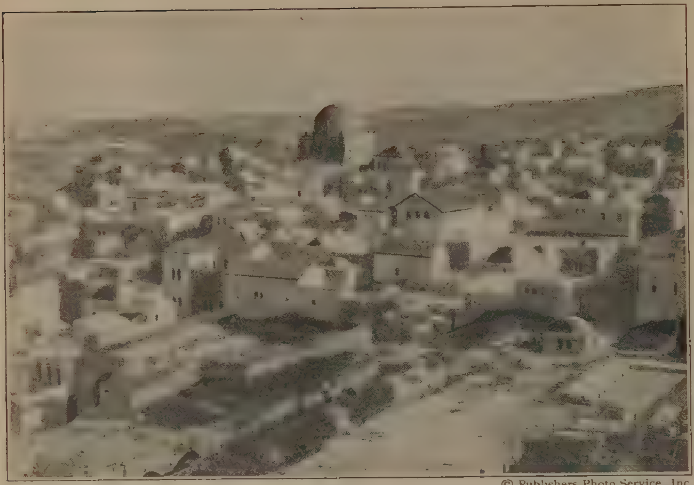


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Figure 66. Part of Jerusalem. The domed building is a Mohammedan mosque, or church. The buildings in Jerusalem are made of sun-dried mud bricks and stone instead of wood. Can you explain why?

Malta. Sailing eastward, we come to the narrowest part of the Mediterranean Sea, between the island of Sicily and the coast of northern Africa. Here we pass the island of Malta, which is the most important port of call for ships passing back and forth through the Mediterranean. If we stop at Malta, we shall see British flags flying from the public buildings, showing that this little island is another British possession. As you might expect, it is a coaling and repair station for ships.

Cyprus. To the north of our route, near the eastern end of the Mediterranean Sea, is the island of Cyprus, which has been governed by the British since 1878. The people are mostly farmers, and before the island came under British control their crops were often badly damaged by droughts. The British have helped the people by building irrigation works.

The British in the Near East

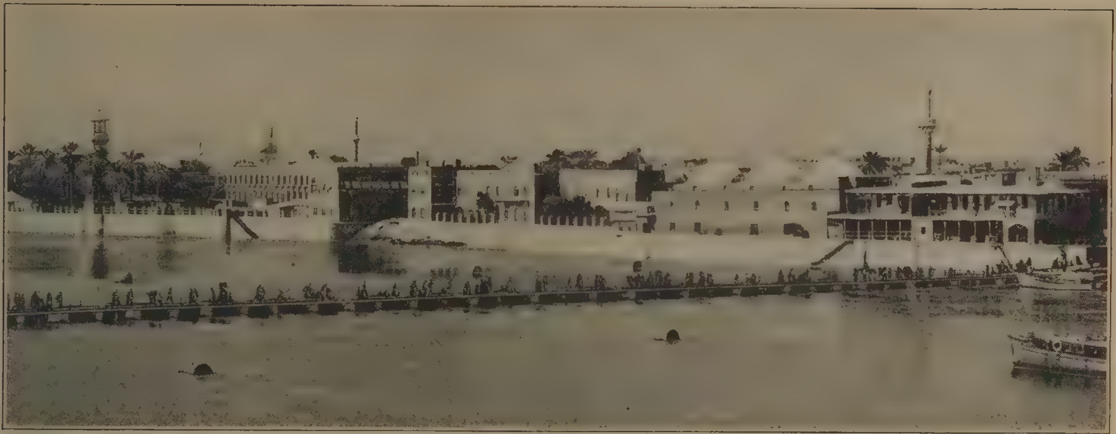
A stop at Haifa. Our next stop is at Haifa, a seaport on the coast of Palestine, at the eastern end of the Mediterranean Sea. Here a number of British officials leave the ship. They have been sent out from London to help in the government of Palestine and Trans-Jordan. These two countries are in southwestern Asia, which is the part of the world known as the "Near East." Find Palestine and Trans-Jordan on the map on page 75 (*B–C4*).

Palestine. Palestine is the old homeland of the Jews, where Jesus lived and carried on his great work as a religious teacher. For that reason it is called the "Holy Land." For hundreds of years before the World War Palestine belonged to Turkey. At the end of the war the League of Nations placed the government in the hands of the British, and there is a plan to make Palestine a new homeland for the Jews. At present the population is made up partly of Jews, but more largely of Arabs.

Turn to Figure 64 on page 71 and study the rainfall of the lands bordering the eastern end of the Mediterranean Sea. Notice that there is a narrow belt along the coast where the yearly rainfall is over 20 inches. This belt is a coastal plain. Farther inland the land grows hilly and mountainous, and the rainfall grows less.

Most of the people of Palestine are farmers. Their chief crops are wheat, barley, and olives and other fruits. You will remember that wheat and barley need less moisture than most grains. Olive trees also can be grown where the rainfall is rather light. The rougher and drier parts of Palestine are better suited to grazing than to farming, and for this reason the raising of sheep and goats has always been important.

The old city of Jerusalem was the Jewish capital in the days of Jesus, and it is still the capital of Palestine. Thousands of tourists visit Jerusalem and other parts of the Holy Land each year. *See Figure 66.*



Courtesy of Board of Foreign Missions, R. C. A.

Figure 67. A bridge across the Tigris River at Bagdad. Bagdad is a meeting place of transportation routes. River boats come upstream from Basra, camel caravans come in from the bordering deserts, and trains come from Basra and from places farther north in Irak. Bagdad is also connected by motor roads with Damascus, in Syria, and with Teheran, in Persia. Find Damascus (*C 4*) and Teheran (*F 3*) on the map (p. 75).

The rift valley. Along the eastern margin of Palestine are the Sea of Galilee, the Jordan River, and the Dead Sea. These bodies of water lie in a deep, narrow trough somewhat like the rift valley of East Africa. The trough is so deep that the surface of the Dead Sea is 1292 feet below the level of the Mediterranean. The Dead Sea has no outlet, and so its waters are salt like those of Great Salt Lake.

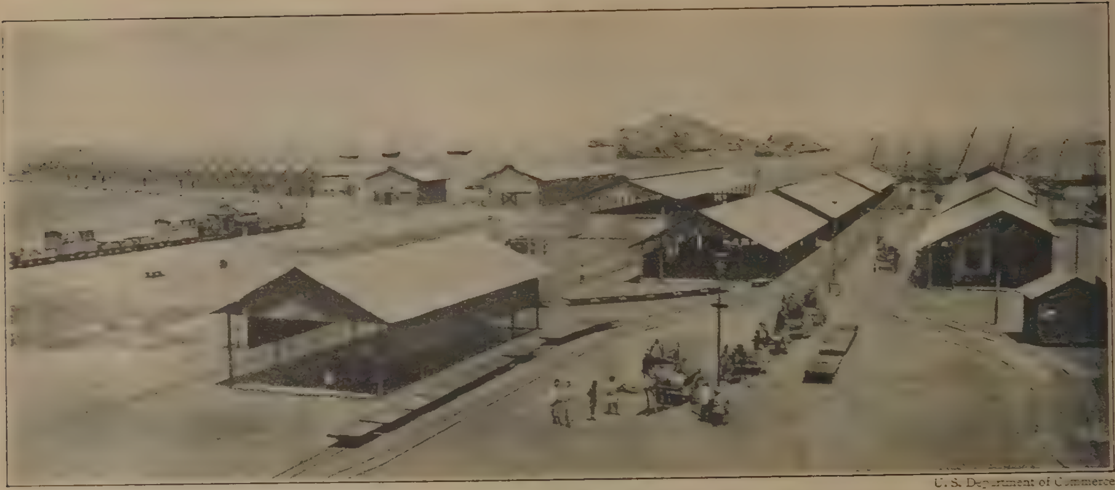
Trans-Jordan. Trans-Jordan is an Arab country with a king of its own, but as yet its government is not strong. For this reason the League of Nations has given the British official in charge of Palestine authority over Trans-Jordan as well. Trans-Jordan is part of the desert plateau of Arabia. The people are Bedouin Arabs like those whom you visited when you were studying "Home Life in Faraway Lands," and they live a wandering life with their camels, sheep, and goats.

Irak. On the map on page 75 find the country of Irak (*D–E4*). Notice that it includes most of the lowland bordering the Tigris and Euphrates rivers. This lowland is called Mesopotamia, which means "the land between the rivers," and its soils are deep and fertile. The region has little rain, but the rivers provide water for irrigating crops.

Like Trans-Jordan, Irak is an Arab kingdom, but the League of Nations has placed it under the protection of Great Britain. One of the crops which the people raise is cotton. The British are encouraging them to raise more cotton by helping them to get good seed and to market the crop. Can you think why this particular crop is of special interest to the British?

Another and more important reason for British interest in Irak is that it has very valuable oil fields. British oil companies are drilling wells and building pipe lines and refineries. What did you learn about Great Britain which explains why the British are especially interested in the production of oil in Irak?

The capital of Irak is the old city of Bagdad, which has been a trading center for thousands of years. The chief port is Basra, which is located at the point where the Tigris and Euphrates rivers join to enter the Persian Gulf. Find these two cities on the map on page 75 (*D–E4*), and study Figure 67.



U. S. Department of Commerce

Figure 68. Warehouses along the water front at Aden. Aden is a center where coffee, hides, and skins from neighboring parts of Arabia and Africa are collected for export, and from which cotton goods from Great Britain are distributed to those lands. Notice the camel in the picture. Why is it that camels are often seen at Aden?

Through the Suez Canal. Leaving Haifa, our ship heads directly toward the northern entrance to the Suez Canal. We stop at Port Said, where we see British flags flying, and then steam southward through the canal. There is little to see on this trip except the bare, sandy desert through which the canal has been cut. We stop again at the British port of Suez, at the southern end of the canal, and then pass out into the Red Sea.

Aden. At the southern end of the Red Sea we pass through the narrow Strait of Bab-el-Mandeb and head toward the port of Aden. There we stop for some hours to take on coal and to unload some cotton goods.

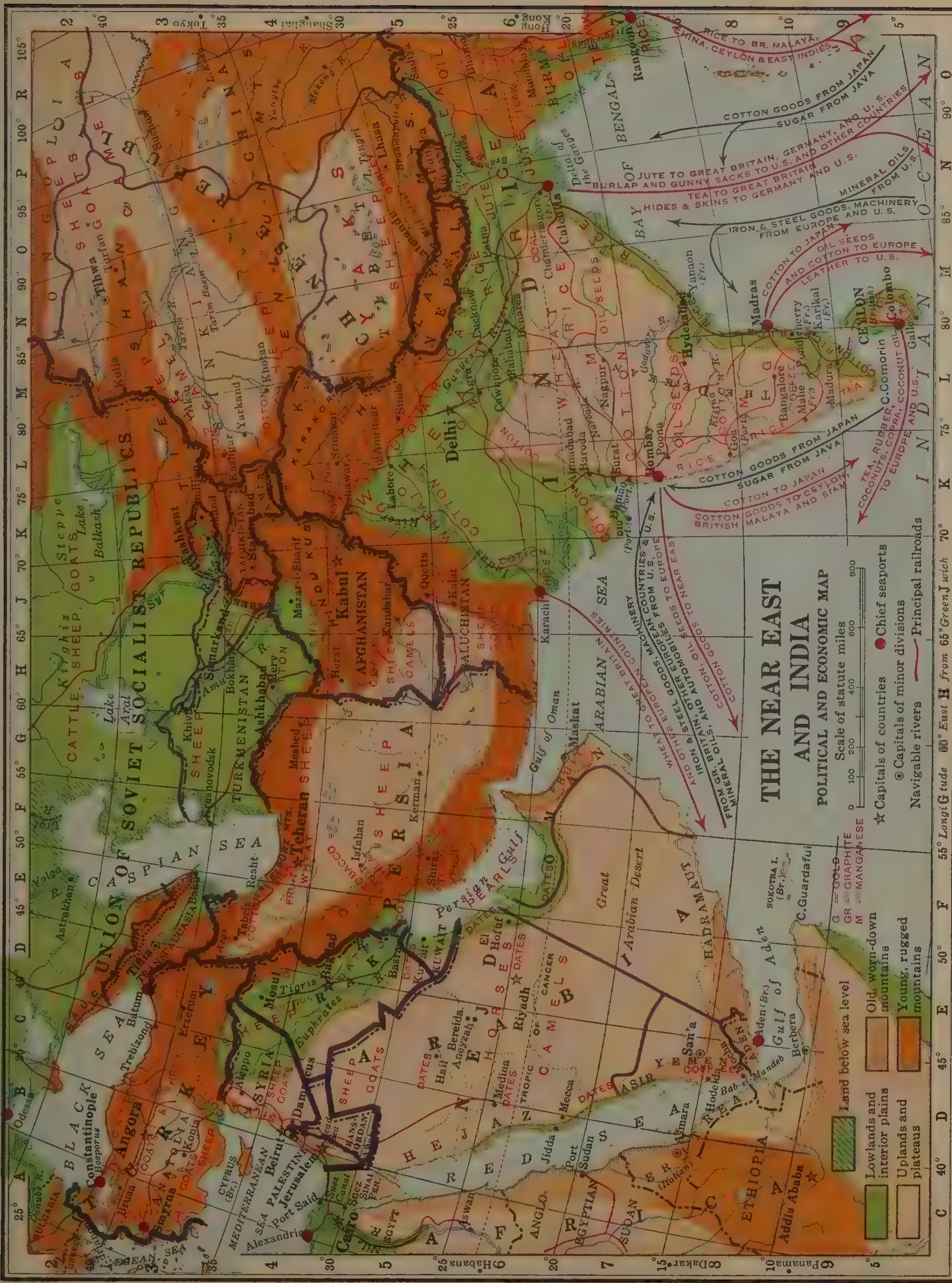
On the map on page 75 find Aden and its port of the same name (*D–E8*). This area at the southwest corner of the peninsula of Arabia belongs to the British and is a valuable possession because it gives them control of the southern entrance to the Red Sea. The port of Aden serves as a coaling station for ships and as a trading center for the people of southern Arabia and the people of Somaliland on the neighboring coast of Africa. *See Figure 68.*

Across the Arabian Sea. From Aden we sail across the Arabian Sea to Bombay, on the western coast of India. The trip from London has taken about three weeks. If we had traveled around the southern tip of Africa instead of through the Suez Canal, it would have taken us several weeks longer.

Something to discuss. Discuss with your class the value of Gibraltar, Malta, Port Said, Suez, and Aden to Great Britain. Try to decide why it is worth while to the British to hold them.

In connection with this discussion you will find it helpful to answer the following questions:

1. Why do the British, more than most nations, need coaling and repair stations for ships along the great water highways of the world?
2. Why is the route between western Europe and Asia by way of the Suez Canal especially important to the British people?
3. How might British trade and shipping suffer if the Strait of Gibraltar, the Suez Canal, and the Strait of Bab-el-Mandeb were controlled by nations which were unfriendly to Great Britain?
4. How does Great Britain help other countries of the world by keeping the Suez route open for the ships of all nations?


THE NEAR EAST AND INDIA
POLITICAL AND ECONOMIC MAP
Scale of statute miles
0 100 200 400 600 800
☆ Capitals of countries
● Chief seaports
⊙ Capitals of minor divisions
Navigable rivers
Principal railroads
Land below sea level
Lowlands and interior plains
Uplands and plateaus
Old, worn-down mountains
Young, rugged mountains
G = GOLD
GR = GRAPHITE
M = MANGANESE
55° Longitude 60° East from 65° Greenwich
UNION OF SOVIET SOCIALIST REPUBLICS
TURKEY
SYRIA
PALESTINE
TRANS-JORDAN
IRAQ
PERSIA
AFGHANISTAN
BALUCHISTAN
ARABIA
YEMEN
ASIR
HEJAZ
NEJD
ADEN
HADRAMAUT
OMAN
EGYPT
ANGLO-EGYPTIAN SUDAN
ETHIOPIA
INDIA
CEYLON
BURMA
TIBET
SINKIANG
CHINA
TURKMENISTAN
TADJIKISTAN
MONGOLIA
BLACK SEA
CASPIAN SEA
MEDITERRANEAN SEA
AEGEAN SEA
Persian Gulf
Gulf of Oman
ARABIAN SEA
BAY OF BENGAL
INDIAN OCEAN
Gulf of Aden
Great Arabian Desert
Constantinople
Angora
Smyrna
Beirut
Damascus
Jerusalem
Port Said
Alexandria
Cairo
Suez
Baghdad
Mosul
Basra
Teheran
Tabriz
Isfahan
Shiraz
Meshed
Kabul
Kandahar
Herat
Quetta
Kalat
Karachi
Delhi
Lahore
Bombay
Madras
Calcutta
Hyderabad
Colombo
Rangoon
Lhasa
Kashgar
Yarkand
Tashkent
Samarkand
Bokhara
Khiva
Ashkhabad
Krasnovodsk
Baku
Tiflis
Batum
Erzerum
Trebizond
Odessa
Astrakhan
Riyadh
Mecca
Medina
Jidda
San'a
Aden
Hodeida
Maskat
Addis Ababa
Berbera
Port Sudan
Aswan
Lake Balkash
Lake Aral
CATTLE
SHEEP
GOATS
CAMELS
COTTON
WHEAT
RICE
JUTE
TEA
OIL SEEDS
DATES
COFFEE
PEARLS
OIL
COAL
WHEAT TO GREAT BRITAIN COUNTRIES
MACHINERY AND OTHER EUROPEAN GOODS, MACHINERY FROM U.S. COUNTRIES & U.S.
IRON & STEEL GOODS, TEXTILES TO EUROPE
FROM GR. BRITAIN, OTHER AUTOMOBILES, SEEDS TO NEAR EAST
MINERAL OILS, AND AUTOMOBILES OIL, COTTON GOODS TO EUROPE
COTTON GOODS FROM JAPAN
SUGAR FROM JAVA
COTTON TO JAPAN
COTTON GOODS TO CEYLON, BRITISH MALAYA AND SIAM
TEA, RUBBER, COCONUTS, COPRA, COCONUT OIL TO EUROPE AND U.S.
COTTON TO JAPAN
OIL SEEDS AND COTTON TO EUROPE
LEATHER TO U.S.
JUTE TO GREAT BRITAIN, GERMANY, AND U.S.
BURLAP AND GUNNY SACKS TO U.S. AND OTHER COUNTRIES
TEA TO GREAT BRITAIN AND U.S.
HIDES & SKINS TO GERMANY AND U.S.
IRON & STEEL GOODS, MACHINERY FROM EUROPE AND U.S.
MINERAL OILS FROM U.S.
COTTON GOODS FROM JAPAN
SUGAR FROM JAVA
RICE TO BR. MALAYA, CHINA, CEYLON & EAST INDIES

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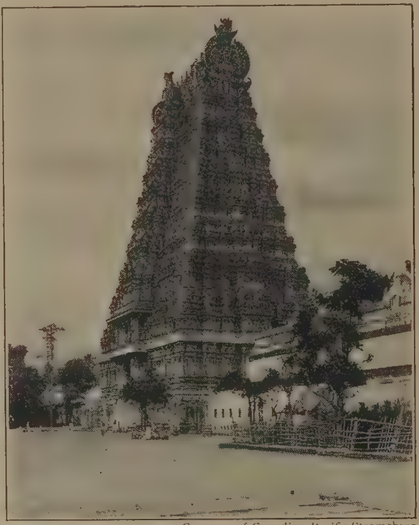
2. India and Ceylon

As you already know, India is one of the most densely populated countries in the world. It is more than half as large as the United States, and is by far the largest and most important of the British lands in Asia. Within it live over three hundred million people, or about two thirds of all the people of the entire British Empire.

As you study about India, find answers to the following questions:

1. How can so many people make a living in this part of Asia?
2. How did the British come to control this densely populated country?
3. Why is India of value to the British people?
4. What have the British done to help the people of India?



Courtesy of Canadian Pacific Steamships

Figure 69. The great gateway to an old Hindu temple at Madura, in southern India. The temple was built about three hundred years ago.

A Country won through Trade

Early trade with India. For hundreds of years before the discovery of America the people of India and other countries of eastern Asia had been supplying the wealthy people of Europe with silks, spices, and precious stones. Camel caravans brought these products overland to the eastern end of the Mediterranean Sea, where they were met by trading ships from the European countries.

The trade with India was so profitable that every trading nation of Europe wanted a share in it, but the transportation of goods by camel caravan was slow and uncertain. This led the seafaring nations of Europe to search for a route by which they could send their ships directly to the ports of India. In 1492 Columbus tried to reach India by sailing west, and discovered the New World instead. A few years later Vasco da Gama, a Portuguese sea captain, discovered the southern route to India around Africa.

A commercial race. After Da Gama's discovery, Portugal, the Netherlands, France, and Great Britain became competitors in a commercial race for control of the trade with India. Each one built trading stations along the coast of India, and there was great rivalry between them. Great Britain won this race, and that is why India is now a part of the British Empire.

Trade and government. As the British increased their trade with India, they found it necessary to send soldiers to protect their merchants against some of the natives, and this led them to take a more and more active part in the government of the country. At times, too, they had to settle troubles between various groups of the native people, and this gave them still more power.

From India the British extended their control to take in Baluchistan on the west, Burma on the east, and the island of Ceylon at the south. Baluchistan and Burma are under the government of India, while Ceylon is a separate colony. Find Baluchistan, Burma, and Ceylon on the map on page 75.

Today the British govern directly about two thirds of India. The rest of the country is made up of native states which are governed by Indian princes, but even in these states there are British representatives who advise the princes in matters of government. The official name of this British possession is the Indian Empire, and the British king is also the emperor of India.

The People of India

The native people. The natives of India are dark-skinned people, but they do not belong to any one race. Instead, they represent a great mixture of races, and among them are many different groups who speak different languages and have different religions. The largest religious group is that of the Hindus, who make up about two thirds of the total population, and the next largest is that of the Mohammedans. In all the cities and in many of the smaller places in India we shall see beautiful temples and mosques, and we shall find that religion plays a large part in the life of the people. *See Figure 69.*

Among the native people there are a few rich *rajahs*, or princes, and many wealthy merchants. But most of the natives are very poor, and out of every hundred of them only about seven can read and write. The British have opened schools and colleges for the natives in the cities and larger towns, but as yet there are very few schools in the country districts.

A few of the young men of India go to England to study in British universities. When they return to their own country, some of them become teachers, some go into business, and some take positions in government offices. These educated men are helping the British to teach the people of India European ways of living and working, and of carrying on business and trade.

The Europeans in India. The number of Europeans in India is very small compared with the number of natives. The Europeans are mostly British officials and merchants and their families. Although the British control India, they have worked out a plan which gives the educated natives a chance to share in the government. Thus India is in part self-governing.

The Land and the Climate

Map work. Before you read further, use the map on page 75 to work out the following map studies.

1. Trace the tropic of Cancer across India. 2. The part of India south of that line is called *peninsular India.* Explain why. 3. What plateau makes up most of peninsular India? 4. What seems to be the most important kind of work there? 5. What kind of land do you find north of the Dekkan? 6. This region is called the plain of northern India. Judging from its latitude, what can you safely say about its climate? 7. What kind of work is most important in this region?

8. The map shows that the plain of northern India is made up of the basins of three great rivers and their tributaries. What rivers are they? 9. Which one flows into the Arabian Sea? 10. Which two flow into the Bay of Bengal? 11. In what mountains do all three rivers rise? 12. What have you already learned about those mountains? 13. Now turn to Figure 64 on page 71 and tell whether or not most of India has enough rain for farming.

The natural regions of India. You have learned from the map that India is a warm country with abundant rainfall, and that it may be divided into three great natural regions: (1) the high, rugged mountains on the north, (2) the great northern plain, and (3) the plateau region called the Dekkan.

The northern plain is remarkably level, and the soils are fine and very fertile, for they have been laid down by the great rivers that rise in the Himalayas and flow through India to the sea. The Dekkan is from 1000 to 3000 feet above the sea; and while it is by no means level, it is not too rough for farming. In the northwestern portion of this region there are rich lava soils like those in the Columbia Plateau of our country.

With all these facts in mind, what can you say about the suitability of the greater part of India for farming?

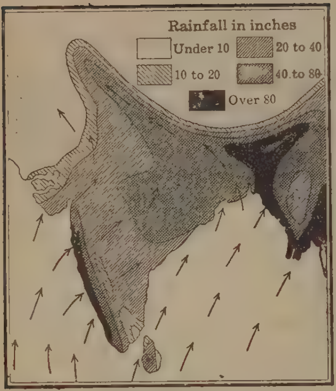


Figure 70. Distribution of rainfall in India during the period of the summer monsoons.

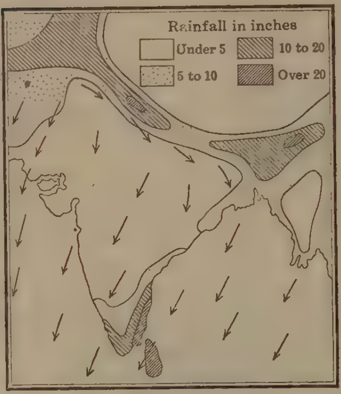


Figure 71. Distribution of rainfall in India during the period of the winter monsoons.

The arrows on both maps show the direction of the winds.

The monsoon winds and rains. You may have heard people say that India is a monsoon land. The word *monsoon* means "seasonal," and India is called a monsoon land because its winds change with the seasons.

During the northern summer the interior of the great continent of Asia becomes very warm. The warm air over the land tends to rise, and the cooler air from over the oceans moves inland close to the earth. Because of this movement of air, India has winds from the southwest in the northern summer. These winds begin to blow in June and usually last until sometime in October. They are called the *summer monsoons.* As they blow from the southwest toward India, they gather up much moisture in crossing the Indian Ocean. When they strike the land, they are forced to rise. In rising they are cooled, and the rain falls. Thus the summer monsoons are wet monsoons and bring much rain to India during the hot months of the year. *See Figure 70.*

The monsoon rains are especially heavy on the western coast of peninsular India, where the winds first strike the land. They are also very heavy in Burma, where the winds strike the land after crossing the Bay of Bengal.

In the northern winter the interior of Asia becomes very cold. The cold air is heavy, and it settles to the ground and then moves outward from the center of the continent. This outward movement of air gives India winter winds from the northeast. These winds usually begin in December, and they are called the *winter monsoons.* Figure 71 shows that much less rain falls in India during the period of the winter monsoons than during the period of the summer monsoons. These northeast winds, blowing toward India from over the land instead of the sea, are dry monsoons, for they bring very little moisture with them. Therefore the mild winter is the dry season in India.

Rainfall and farming. The seasonal distribution of rainfall in India plays an important part in the life and work of the people. During the rainy season the farmers raise crops such as rice, sugar cane, and cotton, which need much heat and moisture. During the dry season they raise wheat, millet, and other crops which can get along with less moisture. In this way most of the farmers of India get at least two crops a year from their land. That is one reason why so many people can live in India.

In some years the monsoon rains are late in coming, and much less rain falls than usual. At such times the crops are poor, and millions of the people suffer from hunger. Famines, as such periods of food shortage are called, have occurred many times in India in the past, and in some of the worst famine years hundreds of thousands of people have died of hunger. Conditions are better now, for the British have built railroads in India, and food supplies can be sent quickly to the famine areas from other parts of the country.

A monsoon test. Prove that you understand about the monsoon conditions in India by completing each sentence below:

1. India is called a monsoon land because Seasonal.

2. The winds that blow over India in the northern summer come from the South west (direction) and are called the summer monsoons or the wet monsoons. They bring much rain to India because ________.

3. The winds that blow over India in the northern winter come from the North east (direction) and are called the winter monsoons or the dry monsoons. They bring little rain to India because ________.

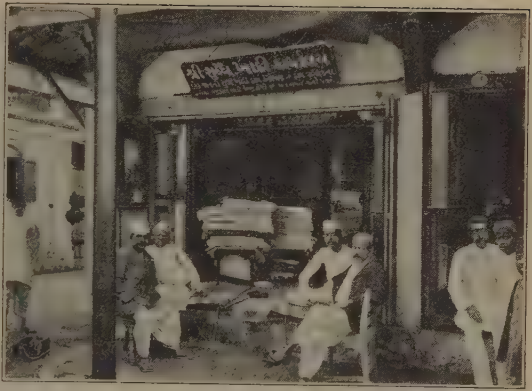


Figure 73. A dry-goods shop in Bombay. Goods of many different kinds are sold in little shops like this, but there are also many larger stores.

From Bombay to Calcutta

Bombay. Our ship has brought us across the Arabian Sea to Bombay, the second largest city of India and the leading seaport of the western coast. In its harbor, which is one of the best in the world, we shall see ships from many distant lands. Find Bombay on the map on page 75 (*K7*) and study Figure 72.

Judging from the map, what do you think our ship may have brought from London to Bombay? What do you think it is likely to carry back from Bombay to England? What do you find among the exports which suggests that Bombay is a manufacturing city?

In Bombay we shall see many things to remind us of the work that the British are doing in India. Along the water front there are large docks and warehouses like those in any great European port, and in the business section there are modern banks and office buildings. In the manufacturing district we shall see many different kinds of mills and factories equipped with up-to-date machinery from England. Among them are more than eighty cotton mills, for Bombay is the leading cotton-manufacturing city of India.

We shall also see a large railroad station in Bombay, for the British have built railroads to connect this seaport with other parts of India. Its location on the western coast and its railroads make Bombay the gateway city for the west-central part of India and the chief port through which imports from Great Britain enter the country.

Although we shall see much that is new and modern in Bombay, we shall also see many things to remind us that India is a very old country

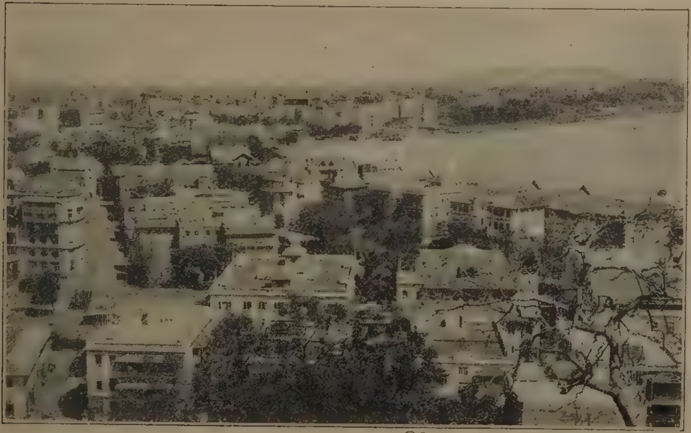


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Figure 72. A view of Bombay. This seaport of western India is a city of over a million people, among whom are many wealthy Indian merchants and many British business men and officials.

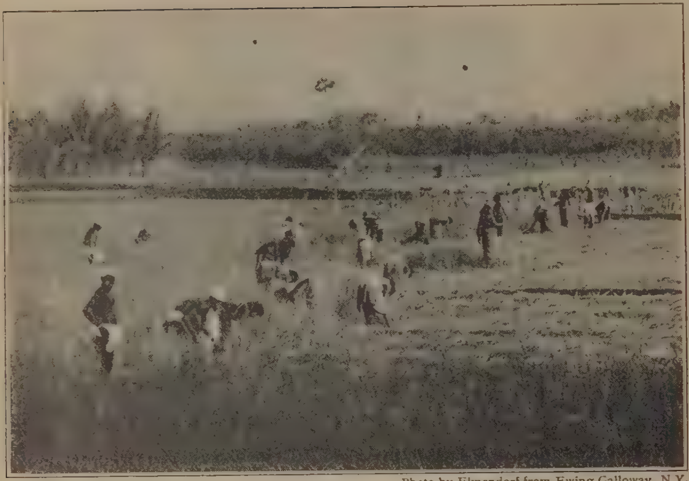
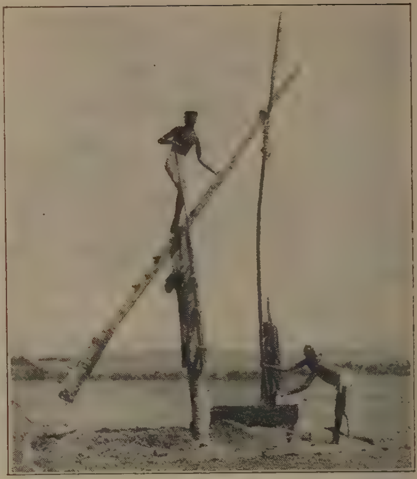


Photo by Elmendorf from Ewing Galloway, N.Y.

Figure 74. Harvesting rice in southeastern India. The seeds are planted in June and the grain is harvested in January. Can you explain why? India is one of the world's great rice-growing countries, and rice is the chief food of millions of the people.



Courtesy of Canadian Pacific Steamships

Figure 75. Drawing water for irrigation from a well in India. Can you explain how the bucket is lowered into the well and then lifted, full of water?

where the people are slow to change their ways of living and working. On the sidewalks Englishmen in European clothes pause to chat with Indian merchants in native dress and bright-colored turbans. In the streets modern automobiles pass slow-moving oxcarts and two-wheeled carts pulled by natives. If we visit the little native shops, we shall find them nothing more than stalls opening on the sidewalks. *See Figure 73.*

The tropical west coast. Leaving Bombay, we steam southward for about 800 miles along the west coast of India, where the monsoon rains are very heavy. The western margin of the Dekkan is called the Western Ghats, and it rises so near the sea that there is only a very narrow lowland along the coast. This coast is densely populated by natives who make their living by raising rice and tropical crops which need much heat and moisture. Few white people care to live here because of the hot, moist climate.

The eastern coastal lowland. When we round the southern end of the peninsula and turn northward, we find that the eastern margin of the plateau (the Eastern Ghats) is some distance inland and that there is a lowland from fifty to a hundred miles wide along the coast. Here too the population is very dense, and most of the people make their living by farming. Among the crops which they raise are rice, cotton, sugar cane, and tropical fruits. Although the total rainfall for the year in this region is heavy, most of it comes between June and December, and the crops that are grown during the dry season have to be irrigated. *See Figures 74 and 75.*

Madras. On the map on page 75 find the city of Madras (*M8*). Madras is the third largest city of India, and the ocean gateway for the southeastern part of the country. It has no natural harbor, but the British have made an excellent one by building great breakwaters such as we saw at some of the ports along the west coast of South America. They have also built railroads to connect Madras with other parts of India. Like Bombay, Madras has cotton mills and exports raw cotton and cotton goods. It also has tanneries which make use of hides and skins from the plateau.

From Madras to Calcutta. From Madras we sail northeastward toward the great delta which the Ganges and the Brahmaputra rivers have built out into the Bay of Bengal. On this low delta plain is the great city of Calcutta. Find Calcutta on the map on page 75 (*N6*).

The approach to the great delta is dangerous for large ships, for there are hidden sand bars beneath the water. For this reason we take on a special pilot when we are still 120 miles from Calcutta. He guides the ship safely into the mouth of the Hooghly River, which is one of the larger outlets, or distributaries, of the Ganges. Calcutta is 80 miles inland on the Hooghly. The river has been deepened by dredging, so that ocean ships may go upstream to docks in the city.

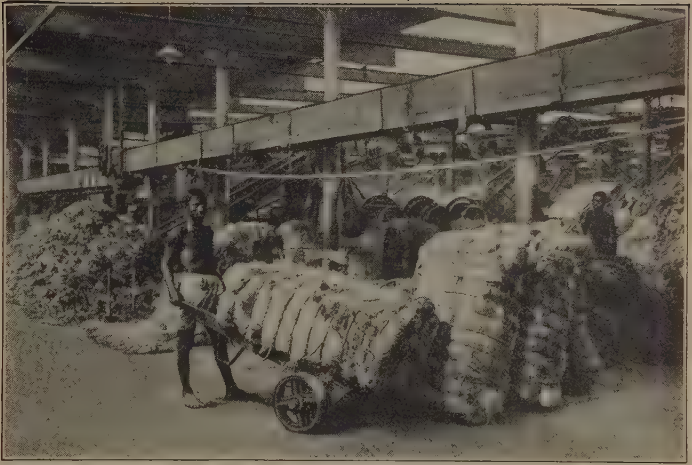


Figure 76. Bales of raw jute in a mill at Calcutta. The jute mills in this city provide work for many thousands of people. What city in Scotland is an important jute-manufacturing center?

Another gateway city. At Calcutta the British have provided all kinds of modern machinery for loading and unloading ships, for this city is an even greater seaport than Bombay. Turn to the map again and name its leading exports. What raw materials do you find among them? What manufactured goods?

Calcutta is the largest city of India, and the ocean gateway for the most fertile and most densely populated part of the northern plain. Many of its buildings, streets, and shops are modern, for it was planned and built by the British. Most of its people, however, are natives, and the city has its bazaars, or open markets, where the native people buy and sell goods, and its temples and mosques.

Jute-manufacturing. Besides being a great seaport, Calcutta is a busy manufacturing city. Along the river front you will see many jute mills, for Calcutta is the world's leading center for jute-manufacturing. In the mills the fibers of jute stems are spun into yarn and woven into the coarse cloth which we call burlap. *See Figure 76.*

Each year shippers of cotton, coffee, sugar, and many other farm products in many different countries need large quantities of burlap and millions of gunny sacks, or burlap bags. For this reason almost every country in the world buys jute or jute products from India. What countries of the Americas do you think are good customers for burlap and gunny sacks?

Map discoveries. Turn to the map on page 75 and find answers to the following questions:

1. In what way is the location of Calcutta like the location of New Orleans?
2. What seaport of the West Indies is in the same latitude as Calcutta? (See western margin of map.)
3. Why has Calcutta become the great jute-manufacturing center of India?
4. Why has Bombay, rather than Calcutta, become the great cotton-manufacturing center?

Something to explain. Large quantities of burlap manufactured in mills in Calcutta are shipped to New Orleans. What reason can you give for this fact?

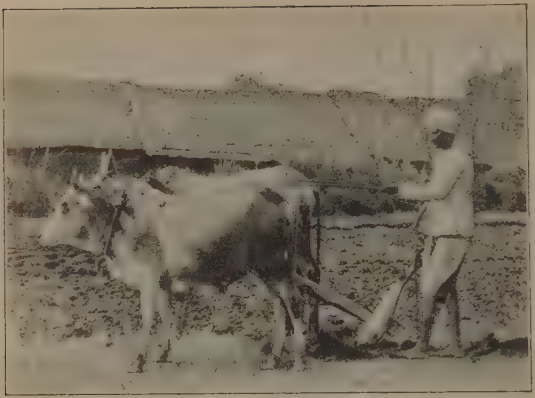


Figure 77. An Indian farmer plowing with a wooden plow drawn by a pair of "humped" bullocks, as they are called from the humps on their backs. Humped cattle are common in all parts of India.

Farm Lands and Inland Cities

A great agricultural country. Let us imagine that we have an airplane in which to fly over India. No matter what season we choose for the trip, we shall see countless people at work in the fields, for nine tenths of the natives are farmers, and the climate is so warm that farm work goes on the year round.

Except in the mountains at the north the surface of India is well suited to farming, and most of the country is well watered. Thus the latitude, the surface, and the rainfall combine to make India one of the great agricultural countries of the world. In addition to these natural advantages the dense population provides cheap labor, or workers, and therefore India can produce large quantities of crops such as cotton and tea, which require much handwork.

As you would expect in such a thickly settled country, food crops are of the greatest importance, and enormous quantities are needed to supply the home markets. But the people also raise cotton, jute, and certain other crops in sufficient quantities to have a large surplus for export.

Farming scenes. We shall see many differences between the farm lands of India and those of our own country. Most of the farms are small, and few of the people use farm machinery. We shall see them plowing with bullocks, or oxen, or with "water buffaloes," such as we saw in the Philippines, and harvesting their crops by hand. *See Figure 77.*

Farm animals. Although there are millions of cattle in India, we shall not find any great ranches, and we shall see very few dairy farms. The cow is a sacred animal to the Hindus, and they will not use its meat for food. Even the milk is not used to any extent. Because of this, little attention is paid to raising cattle for milk or beef. Cattle in India are valuable chiefly as work animals, and for their hides when they die. Nearly every farmer has a pair of bullocks, which

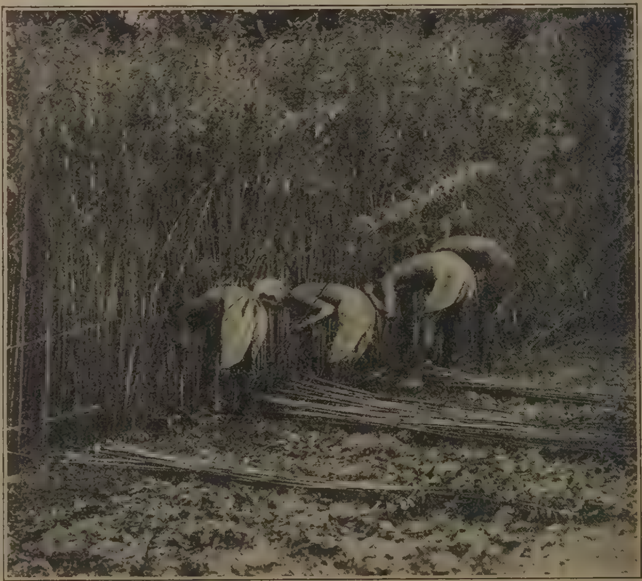


Figure 78. Harvesting jute on the Ganges delta in India. After the stalks have been cut, they are soaked in water and the fibers are scraped from them. Then the fibers are dried and packed in bales for shipment to mills in Calcutta or to distant lands.

he uses to draw his plow and to pull the high-wheeled cart in which he carries his produce to market.

The people of India raise many sheep, especially in the Dekkan, but neither the wool nor the meat is of very good quality. Goats are found everywhere in the country, for they require little care and can live on the poorest of shrubs and grass. Both sheep and goats are raised chiefly for their skins. As you might expect, hides and skins are important exports from India.

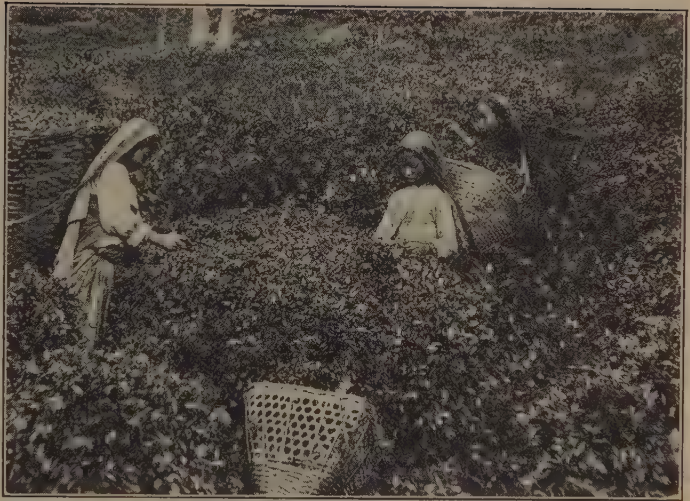


Figure 79. Indian girls picking tea leaves on a plantation near Darjeeling. Since the picking is done so often, the tea plantations provide work for many people throughout the year.

Rice and jute lands. If we fly northeastward from Calcutta, we shall find that the chief crops on the low, flat lands of the great delta are rice and jute. The delta plain is covered with a network of streams, and farm products are carried to market in boats.

Every year, during the rainy season, the rivers rise and overflow their banks, flooding the low delta lands. To avoid danger from floods the people build their houses on mounds of earth in the midst of their fields. In this way they are safe from ordinary floods; but in years when the rains are very heavy and the waters rise unusually high, they have to leave their houses in boats to escape being drowned.

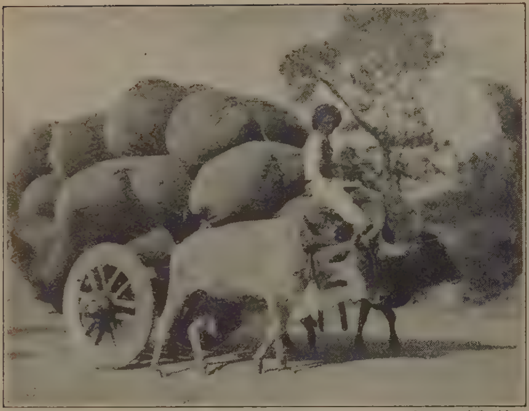
Although the great floods do much damage, the ordinary ones are helpful, for they leave a layer of fine, rich soil spread over the land, and they provide an abundance of moisture for crops. Both rice and jute are crops which need much water while they are growing, and this great delta plain is wonderfully well suited to them. *See Figure 78.*

Tea plantations. If we fly northward to Darjeeling and then eastward along the valley of the Brahmaputra, we shall look down on whole hillsides covered with tea plantations. Tea plants grow best on well-drained hillsides where the yearly rainfall is over 80 inches. In warm countries new leaves keep coming out the whole year long, and in India they are picked at least once, and often twice, a month. *See Figure 79.*

After the leaves have been picked, they are carefully dried and prepared for use. India exports much tea to Great Britain, for the British are great tea-drinkers.

Farming in the Dekkan. If we return to Calcutta and then fly southwestward, we shall soon find ourselves crossing the Dekkan. This plateau is a region where millions of people make a living on small farms. Turn to the map on page 75 and make a list of the crops that you expect to see growing there.

The principal food crop of the Dekkan is millet, though rice is grown in the moister sections. The principal money crops are oil seeds and cotton. The oil seeds include cottonseed, flaxseed, mustard seeds, peanuts, and several other kinds of seeds that are rich in oil. Large quantities of them are exported to Great Britain and other European countries,



Orient and Occident

Figure 80. An Indian farmer hauling his cotton to market in his two-wheeled bullock cart. What two seaports of India use large quantities of cotton from the Dekkan in their mills?

where the oil is pressed out of them and used for many different purposes. In the production of cotton India ranks next to the United States, and the greater part of the crop is grown in the Dekkan. *See Figure 80.*

An old native city. The largest city of the Dekkan is Hyderabad. It is the capital of one of the native states, and the fourth largest city in India. It is very old, and quite different from the great seaports of India, for it is an inland city and has not yet become a manufacturing center. The most interesting sights in the city are the bazaars, where the people from the country round about sell their farm products and buy cotton goods and other things that they need.

The dry plain of the Indus. If we fly northwestward from Hyderabad to the plain bordering the Indus River, we shall find ourselves in a part of India which has so little rain that the farmers must irrigate all their crops with water from the river or from wells. The British have done much to develop irrigation in this region, and the farmers now raise large crops of wheat, barley, corn, millet, and rice. Cotton also is becoming an important crop in this region.

Karachi. The ocean gateway for the plain of the Indus is the seaport of Karachi. Find this city on the map on page 75 (*J6*). What does it export?

For a long time Karachi was only a small settlement, but it has grown fast since the development of irrigation and the building of railroads in the plain of the Indus. Today it is one of the five leading seaports of India, and the chief port for the shipment of wheat.

Baluchistan. West of the plain of the Indus is the mountain and plateau region known as Baluchistan. It is a very dry region, and the few people who live there are mostly nomads who wander about with their flocks and herds. Like all nomadic people, they suffer from hunger in years when the little rain on which they depend fails and many of their animals die. In former years these nomads were sometimes driven by hunger to attack and rob the people in the neighboring lowland of India, and it was to stop these attacks that the British took possession of Baluchistan.

The northern plain of India. It will be interesting to fly up the valley of the Indus and then turn southeastward and return to Calcutta by way of the Ganges Valley. On this trip we shall pass over the northern plain of India, which is one of the richest parts of the country. Within it are many of the finest old Indian cities and some of the best farm lands of the country. *See Figure 81.*

In the upper part of the Indus and Ganges valleys we shall find that the principal winter, or dry-season, crops are wheat, barley, and millet, and that they are irrigated by a great system of canals and wells which the British have built. Among the important summer, or wet-season, crops are cotton and sugar cane. Farther east, in the lower plain of the Ganges, where the rainfall is heavier, the cotton fields disappear and the wheat fields give way to rice fields.

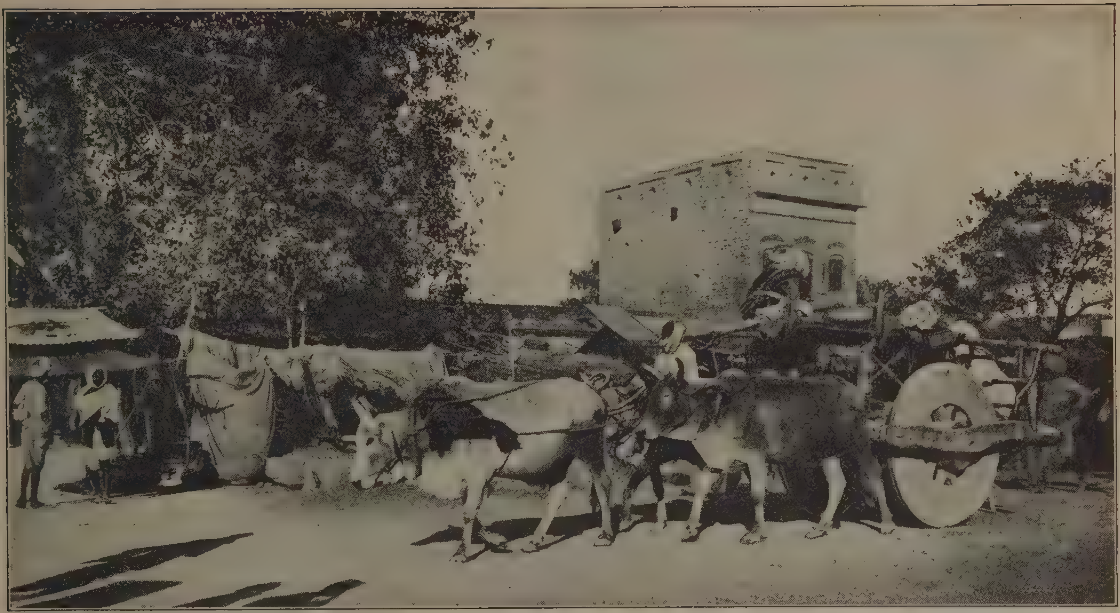


Figure 81. A picture taken on the road to the old city of Benares, in the Ganges Valley. Bullock carts loaded with all kinds of goods are constantly coming and going on the roads which connect the cities of this densely populated region. At the left in the picture is a little booth where food is sold to travelers.

The capital of India. In the midst of the northern plain is Delhi, the capital of India. Because of its central location in the plain, Delhi long ago became a meeting place for roads in northern India, and today it is the most important inland railroad center of India. The city now has a large number of British residents. What brings them there?

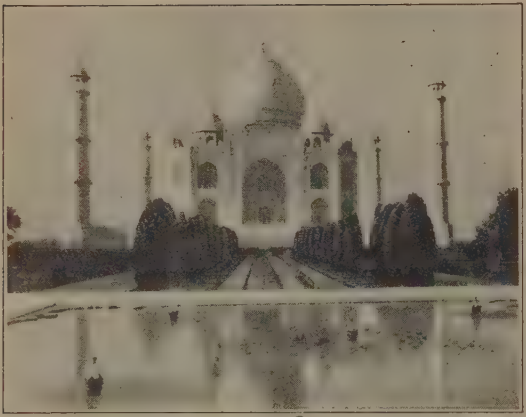
On the map on page 75 find Delhi (*L* 5) and the town of Simla (*L* 4). In what region of India is Simla? This town is about 7000 feet above sea level, and every summer the government officials move up there from Delhi. Can you explain why a mountain town is used as the summer capital for India?

Old cities of the Ganges Valley. As we fly down the Ganges Valley, we shall surely stop at Agra to see the beautiful building called the Taj Mahal. It is made of white marble, and many people think it the most beautiful building in the whole world. *See Figure 82.*

We shall also wish to stop at Benares on the Ganges River. The Ganges is the sacred river of the Hindus, and Benares is the center of their religion. Many thousands of Hindus come to this old city every year to worship in its hundreds of temples and to bathe in the sacred waters of the river.

At Delhi and other places in the northern plain we shall see cotton mills, flour mills, sugar mills, and other modern manufacturing plants which make use of raw materials from the farm lands. But we shall probably be much more interested in the little workshops where native craftsmen make many beautiful things by hand. We shall see some of them carving ivory, others making pottery, and still others hammering copper into beautifully shaped cups, vases, and other forms.

At Agra, Benares, and some of the other old cities we shall see native people weaving beautiful striped silks and gold brocades on hand looms. In fact, all through India we



© De Cou from Ewing Galloway, N.Y.

Figure 82. The Taj Mahal, at Agra. This beautiful marble building was erected about three hundred years ago by an Indian ruler in memory of his wife.

shall find that among the millions of people who cannot read or write there are many who are wonderfully skillful in making beautiful things with their hands. *See Figure 83.*

The Himalaya Mountains

The highest mountains in the world. When you were studying the map of Asia, you learned that the Himalayas are the highest mountains in the world. They rise like a great wall on the northern side of India, and among their summits are snow fields and glaciers which never melt away. *See Figure 84.*

The rainfall on the southern side of the Himalayas is so heavy that the lower slopes are covered with thick forests. The lowest forests are made up of bamboos and many other tropical trees. Higher up, where the air is cooler, there are forests of pines and other evergreen trees, and still higher come the grassy slopes which are too cold for trees.

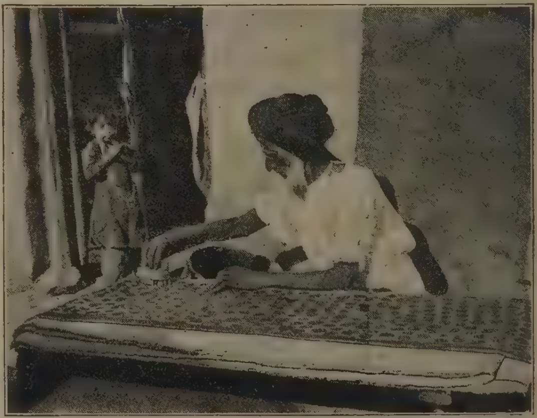
Work in the mountains. In the mountains north of the Plain of the Indus there are many fertile valleys where the people raise a variety of food crops and keep cattle and sheep. These mountain people are very skillful in the weaving of wool, and they make beautiful rugs and shawls which are sold in many parts of the world. You have probably heard of the cashmere shawls which are made in the mountain valley of India known as the Vale of Kashmir.

Nepal and Bhutan. On the map on page 75 find Nepal and Bhutan on the southern slopes of the Himalaya Mountains. These are independent kingdoms, but each one has a British adviser who helps the native ruler in dealing with outside countries. The people get their living chiefly by farming and raising cattle, and what little trade they have is with India on the south and Tibet on the north.

Burma

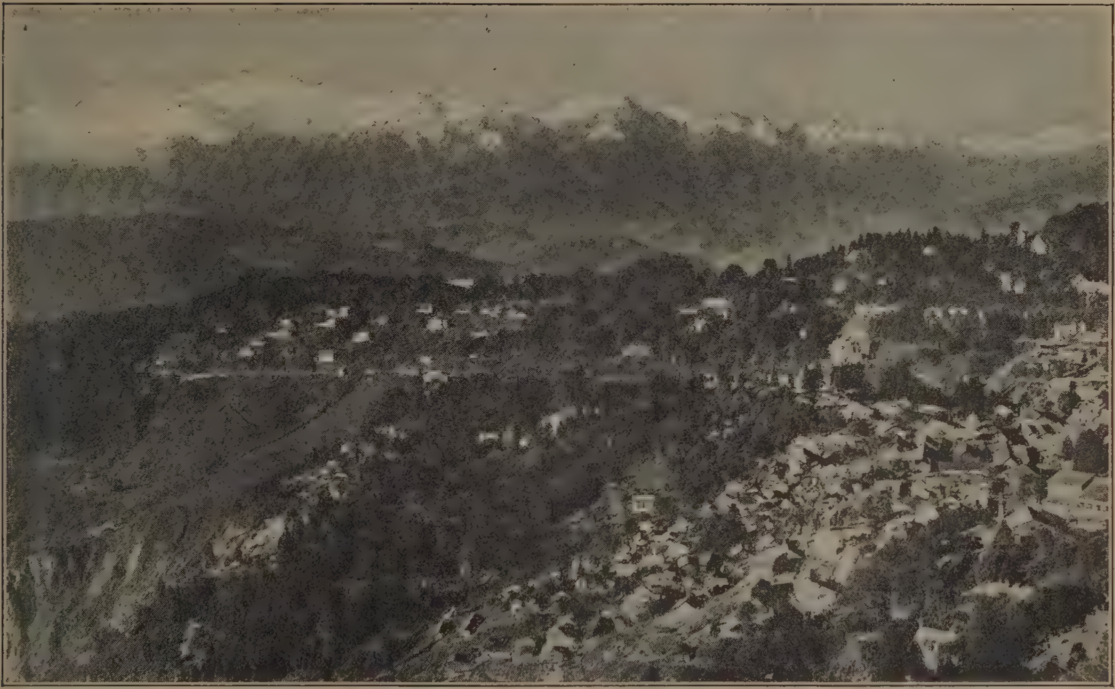
Rangoon and the Irrawaddy Valley. If we wish to visit Burma, we shall probably go by boat from Calcutta to Rangoon. This city is the capital, the largest city, and the seaport of Burma. Find it on the map on page 75 (*P 7*) and notice its location near the mouth of the Irrawaddy River. What is its leading export product?

The delta of the Irrawaddy River is hot and rainy, and the people raise so much rice there that they have a surplus for export.



Herbert Photos, Inc.

Figure 83. An Indian craftsman. He is stamping a design in colors on a piece of cotton cloth which he has woven on a hand loom. Have you ever seen bright-colored printed cotton goods from India?



Photograph by Ewing Galloway, N.Y.

Figure 84. A view of Darjeeling, showing the high, snow-capped peaks of the Himalayas in the distance. How do you explain the fact that there are trees on the foothills where Darjeeling is located, but none on the higher slopes of the mountains beyond? What winds bring much rain and snow to the Himalayas?

Farther up the Irrawaddy Valley the rainfall is somewhat less, and the people raise millet, cotton, and other crops in addition to rice.

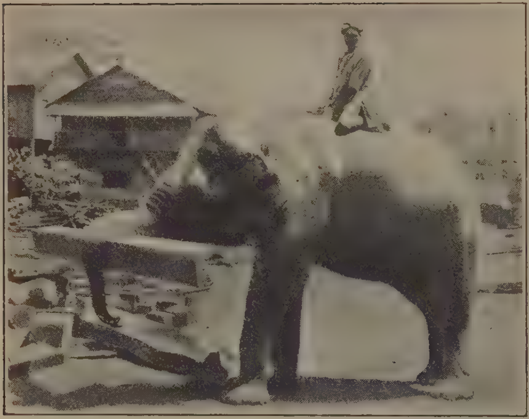
Teak and petroleum. Another important export from Burma is a beautiful hard wood called teak. The trees are cut in the dry season and dragged to the rivers, where they are bound together on bamboo rafts. When the rains come and the rivers rise, the rafts of logs are floated downstream to the sawmills. Teakwood is so heavy that the natives use elephants to get the logs out of the forests and to move the lumber in the lumber yards. *See Figure 85.*

The most valuable mineral product of Burma is petroleum. Find the oil fields of Burma on the map on page 75. Pipe lines have been built to carry the oil from these fields to refineries and to Rangoon for export.

Manufacturing and Trade

Handwork. For thousands of years the people of India have been famous for their skillful handwork. Weaving, pottery-making, metal-working, and carving are old, old industries in India, and they are found side by side with the modern manufacturing industries which the British have introduced.

Advantages for manufacturing. The British have been quick to see the advantages which India has for manufacturing. The farms provide large quantities of raw materials, and the dense population insures abundant labor, or workers, for the mills and factories, and large home markets for manufactured goods. Turn again to the map on page 75 and tell what India has in the way of fuel to make steam power.



Courtesy of Hamburg-American Line

Figure 85. An elephant piling teakwood in a lumber yard at Rangoon. Have you ever seen chairs, tables, or other pieces of furniture made of carved teakwood?

The leading industries. Because India has all these advantages for manufacturing, the British have built mills and factories and have equipped them with machinery made in England. At present the two leading industries are cotton-manufacturing and jute-manufacturing because cotton and jute are the two most important raw materials produced in India. You already know that there are markets all over the world for jute goods. For cotton goods there is a large home market, for the millions of poor people in India wear cotton clothing.

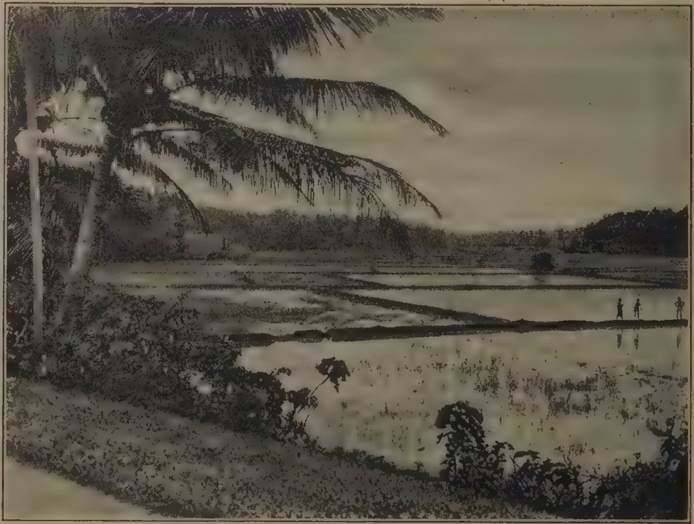
The trade of India. From the map on page 75 make a list of the exports of India, dividing them into two classes: (1) products of farming and (2) products of manufacturing. Which kind of work provides more of the export products? Among the exports of farm products do you find more foodstuffs or more raw materials? How do you explain this?

Of all the exports of India, raw cotton is the most important. About half the yearly crop is exported, and Japan is the best customer. Great Britain takes about one fifth of the exports of India, buying most of the tea and wheat that are shipped away, and large quantities of the raw jute and oil seeds. Our own country is India's best customer for burlap and hides and skins.

Now turn to the map on page 75 again and study the imports of India. What do you find there to show that as yet India does not manufacture enough cotton cloth to supply the home market? What country exports large quantities of cotton goods to India?

The imports show that India also provides an excellent market for machinery, iron and steel goods, automobiles, and mineral oils. Great Britain, the United States, and Germany lead in supplying these needs.

Altogether Great Britain supplies nearly half of all the imports of India. This great country, with its many millions of people, is one of Great Britain's best markets for manufactured goods. It is this fact, more than anything else, that makes the Indian Empire of great value to the British people.



Courtesy of Canadian Pacific Steamships

Figure 86. Rice fields in Ceylon. Rice is a plant which needs much moisture, and so the fields are flooded during the early part of its growth. Why is Ceylon well suited to rice-growing?

Ceylon

A tropical island. Southeast of India is the pear-shaped island of Ceylon, which is about half the size of England. The center of the island is hilly and mountainous, but there is a lowland around the coast. The lowland is hot and moist because Ceylon is near the equator and has a monsoon climate. The lowland is well suited to rice-growing, and rice is the chief food of the natives. *See Figure 86.*

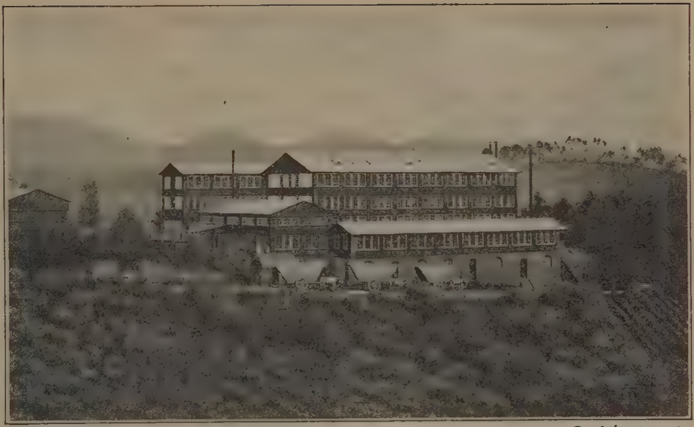

© Plâté Ltd., Ceylon

Figure 87. A tea factory on a plantation in Ceylon. In the factories the tea leaves are carefully cured and prepared for export. The two-wheeled carts carry the tea to the seaport of Colombo.

Plantation products. In India you found most of the natives working on small farms. In Ceylon many of the natives work on large plantations owned by British and other European planters. On the coastal lowland there are coconut plantations. On the lower mountain slopes in the southwestern part of the island there are rubber plantations, and on the higher slopes in the same section there are large tea plantations. *See Figure 87.*

About fifty years ago the British sent several thousand seedlings of Brazilian rubber trees to Ceylon and established the first plantation there. That was the beginning of rubber-growing in southeastern Asia. From Ceylon the plantations spread to British Malaya and the East Indies, and this part of Asia now produces more than nine tenths of the world's rubber. From Ceylon rubber is the second most valuable export. Tea ranks first.

Colombo and its trade. Find Ceylon on the map on page 75 and locate its seaport of Colombo (*M9*). The location of Colombo on the southwest coast of the island makes it an important port of call for ships on their way back and forth between the countries of Europe and the countries of eastern Asia.

At Colombo you will see ships being loaded with tea, rubber, copra, coconuts, and coconut oil. These plantation products go chiefly to Great Britain, other European countries, and the United States. Another export product is graphite, a mineral which is mined in Ceylon. One of the uses of graphite is in making the "lead" for pencils.

Many of the ships that come to Colombo bring rice from Burma and neighboring lands. Rice is the leading import, for the people of Ceylon do not raise enough to supply their needs. The next most valuable import is cotton goods for clothing, which come largely from India.

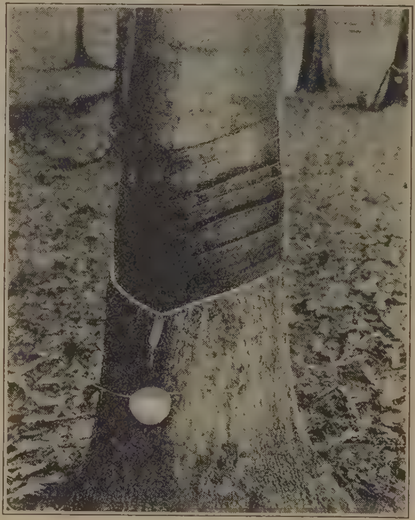
Can you name these products? Name each agricultural product described below.

1. A plant fiber grown in India, used in factories in Bombay and Madras, and also exported in large quantities.
2. A plant fiber grown on the Ganges delta and used in many factories in Calcutta.
3. The leading crop grown for food by the people of India and Ceylon.
4. A plantation product exported from both India and Ceylon, much of it going to England.
5. The important raw material for manufacturing exported from Ceylon.

3. British Possessions in the Far East

When we speak of the "Far East," we mean China, Japan, and the neighboring countries of eastern Asia. Another name for the Far East is the Orient, which means simply "the East," and we often call the people of that part of the world Orientals.

The lands of the Far East are shown on the map on page 298. Turn to that map and find British Malaya (*B6*), the British lands in Borneo (*C6*), and the island of Hong Kong (*C4*). These are the British possessions in the Far East. As you study about each one, try to decide why it is of value to the British people.



Courtesy of Canadian Pacific Steamships

Figure 88. A tapped rubber tree on a plantation in British Malaya. The latex flows into a little metal trough and then drips into the cup below.

British Malaya. British Malaya is in the southern part of the Malay Peninsula, which stretches southward from Burma. In the interior of the country there are heavily forested mountains, but along both coasts there are lowland plains. These plains are hot and rainy the year round, and are used for plantations of rubber, coconuts, sugar cane, rice, pineapples, and other tropical products.

Rubber plantations. British Malaya produces about four tenths of all the world's rubber, and this important raw material is the most valuable export of the country. Most of the large plantations are owned by British and other European rubber companies, and altogether they cover hundreds of thousands of acres. More than two thirds of the plantation laborers are natives of India, and the rest are mostly Chinese and Malays.

On the plantations the rubber trees are set out in rows and carefully tended. Every other day, early in the morning, the laborers "tap" the trees by removing a thin shaving of the bark with a sharp knife. This starts the flow of the creamy-colored latex, which drips into small cups fastened to the trees. *See Figure 88.*

Later in the morning the laborers collect the latex in pails and carry it to the factories on the plantations. In the factories the latex is treated in such a way that it thickens. When it is thick enough, it is "milled," or pressed into long, narrow sheets, and the sheets are hung up to dry. When they are dry enough, they are packed in boxes or bales and sent to Singapore for export to Europe and the United States.

From some of the plantations the liquid latex is now sent in tanks to Singapore and there loaded in tank steamers which carry it to the United States.

Tin-mining. British Malaya is also the leading country in the production of tin, providing about one third of the world's supply. The tin ore is found near the surface of the ground, mixed with clay, sand, and gravel. At some of the mines the workmen use huge hose to loosen the ore-bearing earth and to wash it into troughs where the ore is separated from the worthless rock material. At others great dredges which are run by electric power are used instead of hose.

From the mines the tin ores are sent to smelting plants at Singapore and on the island of Penang. Nearly all the tin from the smelters is exported, and much of it goes to the southern part of Wales. Can you explain why?

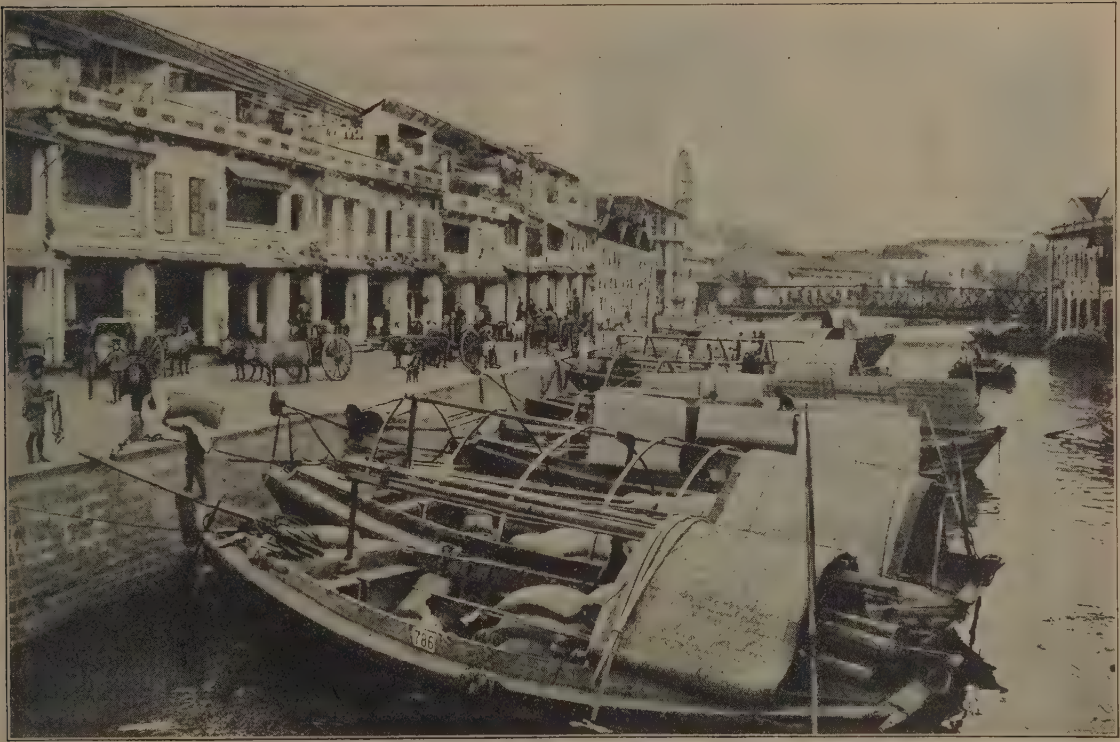


Figure 89. Small freight boats at Singapore. Hundreds of such boats are used to transfer goods from one ship to another, and to carry goods back and forth between ships anchored in the harbor and warehouses on shore. Singapore is a world market for the buying and selling of rubber. Can you explain why?

Singapore. On the map on page 298 find the city of Singapore (*B6*) and notice its location at the southern entrance to the Strait of Malacca. Singapore is called the "Gateway to the Orient," and it is one of the greatest seaports and trading centers of the world. Can you suggest any reasons for its growth?

Turn to the map on pages 338–339, and you will see that all ships using the shortest route between ports of Europe or India and ports on the eastern coast of Asia must swing around the southern end of the Malay Peninsula. You will also see that the southern entrance to the Strait of Malacca is the meeting place for ships on this great trade route.

Singapore is located on a little island of the same name. In 1819, when the British gained possession of the island, it had only a few hundred people. Today it has about half a million, nearly three fourths of whom live in the great seaport.

It is the location of Singapore which accounts for its wonderful growth. Into its harbor come ships from all over the world, and many of them exchange cargoes there. Others bring goods to be distributed from Singapore to neighboring parts of Asia and the East Indies, and carry away rubber, tin, and other products of Malaya and the neighboring lands. Because of its great trade Singapore is one of the most valuable outposts of the British Empire. *See Figure 89.*

British Borneo. The large island of Borneo is one of the East Indies. The greater part of it belongs to the Dutch people, but the

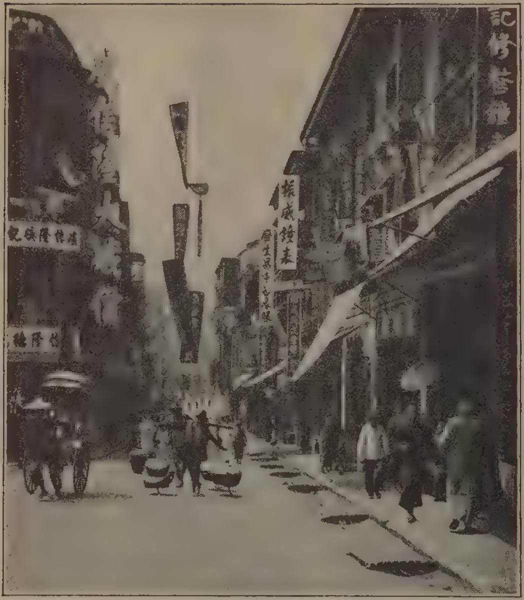


Figure 90. A street in Hong Kong. Notice the Chinese rickshaw at the left, the Chinese coolies carrying burdens hung from yokes on their shoulders, and the Chinese signs outside the shops.

British control a section in the northwest about as large as Scotland. Most of the population is made up of natives and of people who have come from other far eastern lands, and they get their living by raising various tropical products.

The British have established rubber plantations in their part of the island, and rubber is one of the more important exports. Most of the trade is carried on through Singapore and Hong Kong.

Hong Kong. The small island of Hong Kong, off the south coast of China, was ceded, or transferred, to Great Britain by the Chinese in 1841. The island is separated from the mainland by a narrow strait, and a small part of the mainland has been leased to the British. The harbor is between the island and the mainland, and there are docks for ships on both sides.

Hong Kong, like Singapore, is a great seaport and trading center where ships from all parts of the world stop and exchange cargoes. It is also one of the chief gateways through which the exports of China are shipped to distant lands. The population of the city is chiefly Chinese, but the British control the government. Many wealthy Chinese merchants have their headquarters in Hong Kong, where they are under British protection. *See Figure 90.*

Weihaiwei. Much farther north on the coast of China is a smaller area which the Chinese have leased to the British. This area includes the port of Weihaiwei, which the British use as a base for one of the squadrons of their navy. Find this port on the map on page 298 (*D3*).

British islands in the South Pacific Ocean. Among the large number of small tropical islands in the South Pacific Ocean there are many which have come in one way or another to belong to the British. Find these British islands on the map on pages 42–43. Some of them are low islands of coral rock, and others are the tops of volcanic mountains which rise high above the sea. The higher islands have heavy rainfall because the winds that strike them rise, become chilled, and give up their moisture. The mountain slopes of these islands are densely forested, and the coastal lowlands are fringed with coconut palms.

The native people of these islands find life very easy. They need but little clothing, and small huts thatched with palm leaves provide them with shelter from the sun and rain. Coconut trees, banana plants, and breadfruit trees furnish much of their food, and the rest comes largely from the sea, for the natives are skillful fishermen.

Some of the islands are used as coaling and repair stations for British ships, and as radio and cable stations where messages can be sent and received. This is the chief reason why the British care to hold them.

Testing yourself. Each of the cities listed below this exercise belongs to one of the following phrases. Write the names in their correct order.

1. The largest city of India and the world's greatest jute-manufacturing center.
2. The center of the Hindu religion.
3. The capital of India.
4. India's leading cotton-manufacturing city.
5. The capital and largest city of Palestine.
6. The seaport of Ceylon.
7. The great seaport of British Malaya, called the "Gateway to the Orient."
8. A famous old trading center in Irak.
9. The gateway for the Indus Valley and the chief wheat-exporting port of India.
10. The seaport of Burma.
11. The seaport of southeastern India.
12. The port at the junction of the Tigris and Euphrates rivers.

Bagdad
12 Basra
Benares
4 Bombay
Calcutta
6 Colombo
Delhi
5 Jerusalem
Karachi
11 Madras
Rangoon
7 Singapore

Can you name these places? You have learned that the British hold several important places which give them control of the great shipping route from western Europe to eastern Asia. Name the place which guards

1. The western gateway to the Mediterranean.
2. The narrowest part of the Mediterranean.
3. The northern entrance to the Suez Canal.
4. The southern entrance to the Red Sea.
5. The southern entrance to Malacca Strait.

Making choices. Choose the correct ending for each of the following sentences:

1. The chief food crop of India is

millet. sugar cane. rice. wheat.

2. The most important raw material for manufacturing produced in India is

rubber. hides and skins. wool. cotton.

3. The most important raw material for manufacturing produced in British Malaya and Ceylon is

jute. cotton. rubber. wool.

4. British Malaya produces about one third of the world's supply of

manganese. copper. iron. tin.

5. The most valuable export of Ceylon is

tea. coconuts. sugar. rice.

6. The British control valuable supplies of petroleum in

British Malaya. Burma. Ceylon.

7. The exports of India are chiefly products of

mining. farming. lumbering. fishing.

8. The imports of India are largely

manufactures. foodstuffs. raw materials.

9. The leading exports from India to Great Britain are

cotton and rice. tea and raw jute.
sugar and coconuts.

10. The United States is India's best customer for

raw jute and tea. cotton and wheat.
burlap and hides and skins.

Sentences to complete. Complete each sentence below correctly:

1. The highest mountains in the world are the ----------.

2. The winds which bring rain to India are the ------ ---------.

3. The plateau of India is called the ------.

4. The eastern and western margins of the plateau are called the ------.

5. The sacred river of the Hindus is the ------.

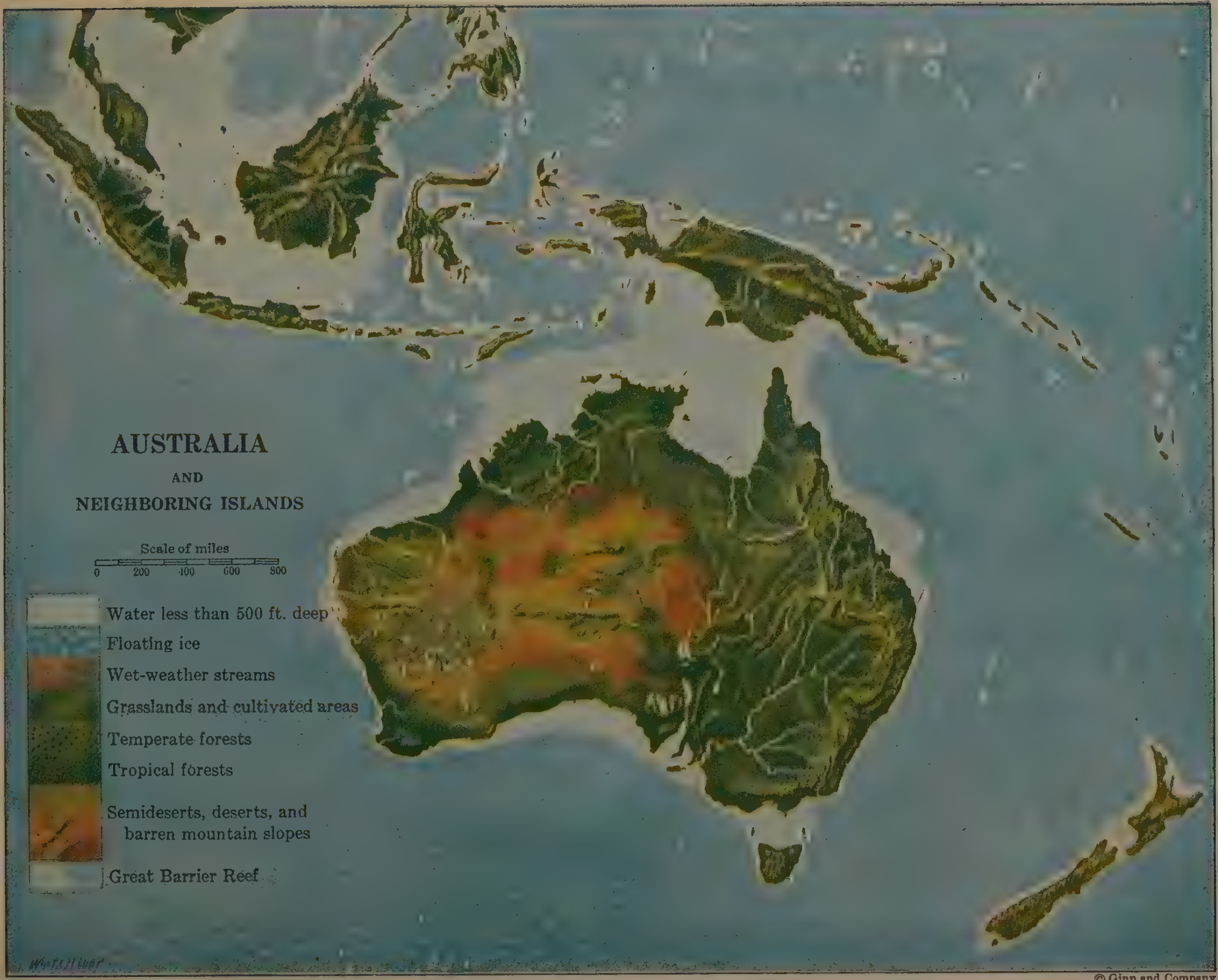
6. The beautiful building at Agra is the --- -----.

7. The island off the south coast of China which belongs to the British is ---- ----.

8. The island southeast of India which belongs to Great Britain is ------.

Some things to explain. Explain what the British have done in India to (1) help the farmers; (2) provide better means of transportation; (3) educate the people; (4) prevent famines.

Special credit work. Try to find a book which describes the Taj Mahal and tells about its history. Report to your class on this subject.



AUSTRALIA AND NEIGHBORING ISLANDS

Scale of miles
0
200
400
600
800
Water less than 500 ft. deep
Floating ice
Wet-weather streams
Grasslands and cultivated areas
Temperate forests
Tropical forests
Semideserts, deserts, and barren mountain slopes
Great Barrier Reef

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V. THE COMMONWEALTH OF AUSTRALIA

Foreword. After our visits to the British lands in Asia, where we saw so many dark-skinned people and heard so many strange languages, Australia will seem almost like home. Nearly all the Australians are people of British descent, and so they speak the English language. They have adopted a "White Australia policy," which means that they have laws which make it almost impossible for people of the darker-skinned races to settle in their country. They want only white people, and they prefer British settlers to all others.

Turn to pages 330–331 and compare Australia and the United States in size and population. Notice that while Australia is almost as large as our country, it has only about one twentieth as many people. In fact, the number of people in the entire continent is not much greater than the number who live in New York City.

Below are some questions for which you will want to find answers as you study about Australia. Read them through, and then make a list of any other questions about the island continent that you would like to have answered.

1. How does Australia happen to be part of the British Empire?
2. What is there about Australia that has led many people from the British Isles to settle there?
3. What natural resources has Australia, and how are the people developing them?
4. What problems must the Australians solve in developing their country?
5. Why is the population of Australia so much smaller than the population of the United States?

Map work. Begin your study of Australia by working out the map studies in Group I on page 97.

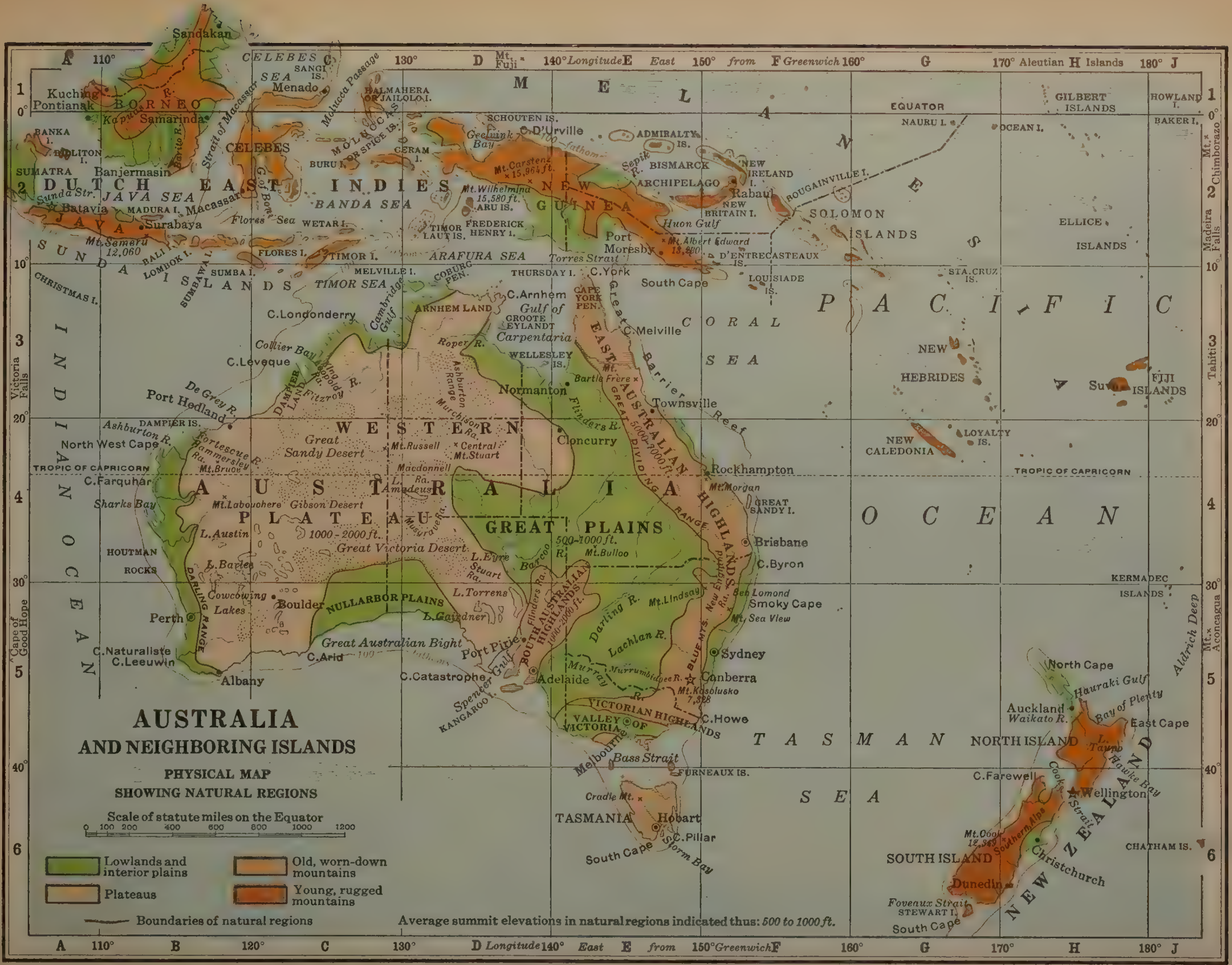
1. Discovery and Settlement of Australia

Turn to the map on pages 334–335 and tell what European explorers visited Australia about the time when the first settlements were being made on the eastern coast of our country. What parts of the coast of Australia did they see? Which coast of Australia was visited much later by an Englishman? Do you know why the Dutch made no settlements in Australia, and why the British, who came much later, now hold the entire continent?

Dutch explorations. As it happened, the Dutch discoverers of Australia saw some of the least attractive parts of the continent, for the northern coast is a moist, tropical land, and the parts of the western and southern coasts which they saw are very dry. When they learned that there were no silks, spices, or precious stones to be had in Australia, they went away disappointed, and they lost interest in this new-found land. More than a hundred years passed before any of the people of Europe attempted to learn more about this southern continent.

The first settlements. Captain James Cook, a famous British explorer, visited the southeastern part of the coast of Australia in 1770 during a journey around the world. That part of the coast has a mild climate with abundant rainfall, and is attractive to white people. Captain Cook took possession of the entire eastern coast in the name of the British king; and when he returned to England, he made such a favorable report concerning it that the British decided to send settlers to Australia.

The first settlement was made in 1788, on the shore of the large natural harbor where Sydney is now located. Within a few years other settlements were made on the eastern and southeastern coasts of Australia. Find Sydney on the map on page 96 (*F5*) and then turn over to page 98 and study Figure 93.



AUSTRALIA
AND NEIGHBORING ISLANDS

PHYSICAL MAP
SHOWING NATURAL REGIONS

Scale of statute miles on the Equator
0 100 200 400 600 800 1000 1200
Lowlands and interior plains
Plateaus
Old, worn-down mountains
Young, rugged mountains
Boundaries of natural regions
Average summit elevations in natural regions indicated thus: 500 to 1000 ft.
110° 120° 130° 140° Longitude East from Greenwich 150° 160° 170° 180°
Aleutian Islands
Mt. Fuji
Mt. Chimborazo
Madeira Falls
Tahiti
Mt. Aconcagua
Victoria Falls
Cape of Good Hope
EQUATOR
TROPIC OF CAPRICORN
DUTCH EAST INDIES
BORNEO
CELEBES
JAVA
SUMATRA
SUNDA ISLANDS
MOLUCCAS OR SPICE IS.
NEW GUINEA
BISMARCK ARCHIPELAGO
SOLOMON ISLANDS
MELANESIA
NEW HEBRIDES
NEW CALEDONIA
LOYALTY IS.
FIJI ISLANDS
ELLICE ISLANDS
GILBERT ISLANDS
KERMADEC ISLANDS
CHATHAM IS.
PACIFIC OCEAN
INDIAN OCEAN
TASMAN SEA
CORAL SEA
ARAFURA SEA
TIMOR SEA
BANDA SEA
JAVA SEA
CELEBES SEA
AUSTRALIA
WESTERN PLATEAU 1000-2000 ft.
GREAT PLAINS 500-1000 ft.
EAST AUSTRALIAN HIGHLANDS
GREAT DIVIDING RANGE 5000-7000 ft.
SOUTH AUSTRALIAN HIGHLANDS 1000-2000 ft.
VICTORIAN HIGHLANDS
VALLEY OF VICTORIA
NULLARBOR PLAINS
DARLING RANGE
Great Sandy Desert
Gibson Desert
Great Victoria Desert
Great Barrier Reef
Great Australian Bight
Gulf of Carpentaria
ARNHEM LAND
CAPE YORK PEN.
Perth
Albany
Adelaide
Melbourne
Sydney
Canberra
Brisbane
Rockhampton
Townsville
Port Moresby
Batavia
Surabaya
Macassar
Menado
Sandakan
Kuching
Pontianak
Banjermasin
Samarinda
Rabaul
Normanton
Cloncurry
Port Hedland
Port Pirie
Boulder
Mt. Kosciusko 7,328
Mt. Carstenz 15,964 ft.
Mt. Wilhelmina 15,580 ft.
Mt. Albert Edward 13,200
Mt. Semeru 12,060
Mt. Cook 12,349
TASMANIA
Hobart
Bass Strait
Torres Strait
NEW ZEALAND
NORTH ISLAND
SOUTH ISLAND
Auckland
Wellington
Christchurch
Dunedin
Cook Strait
Foveaux Strait
STEWART I.
Southern Alps
Aldrich Deep

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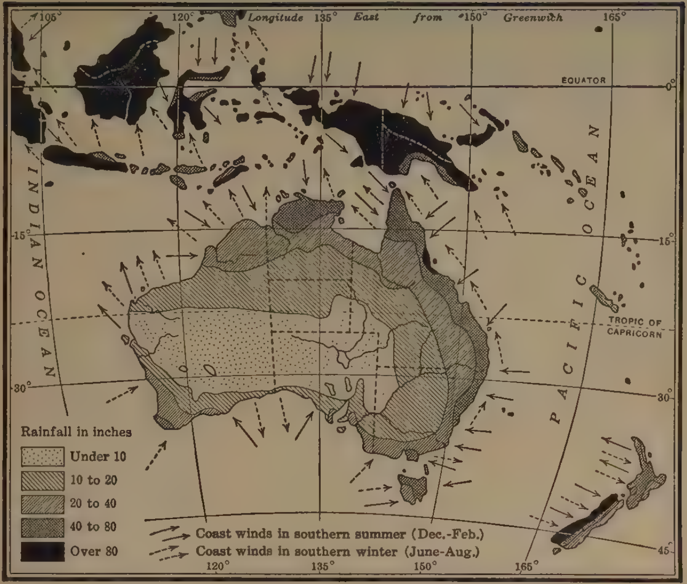

Longitude 135° East from 150° Greenwich
105°
120°
165°
EQUATOR
INDIAN OCEAN
PACIFIC OCEAN
TROPIC OF CAPRICORN
15°
30°
45°
Rainfall in inches
Under 10
10 to 20
20 to 40
40 to 80
Over 80
Coast winds in southern summer (Dec.-Feb.)
Coast winds in southern winter (June-Aug.)

Figure 91. Distribution of rainfall in Australia.

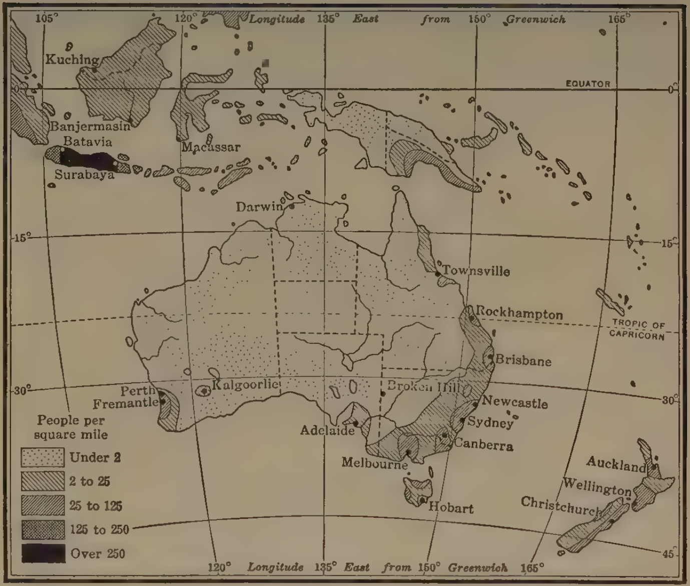

Longitude 135° East from 150° Greenwich
105°
120°
165°
EQUATOR
TROPIC OF CAPRICORN
15°
30°
45°
Kuching
Banjermasin
Batavia
Surabaya
Macassar
Darwin
Townsville
Rockhampton
Brisbane
Kalgoorlie
Broken Hill
Newcastle
Sydney
Canberra
Perth
Fremantle
Adelaide
Melbourne
Hobart
Auckland
Wellington
Christchurch
People per square mile
Under 2
2 to 25
25 to 125
125 to 250
Over 250

Figure 92. Distribution of people in Australia.

MAP STUDIES

Group I

1. What part of Australia is in the tropics? 2. What part is in the south temperate zone? 3. Where in Australia do you find the highest mountains? 4. What kind of mountains are they? 5. What mountains in the United States are of the same kind? 6. Find Mount Kosciusko, the highest peak in Australia (*E*5). How high is it?

Rocky

7. What does Figure 91 show about the rainfall along the eastern coast of Australia? 8. What region lies west of the eastern highlands? 9. How does the rainfall of that region compare with the rainfall along the eastern coast? 10. What reason can you suggest for the difference? 11. What do you think is probably the most difficult problem which the farmers of the Great Plains of Australia have to solve? water

12. Find the Murray and Darling rivers (*E*5). 13. These two rivers and their tributaries form the only great river system of Australia. What use do you think the people probably make of them? 14. What region lies west of the Great Plains? Western Plateau 15. What can you tell about that region by comparing the physical map with the rainfall map?

Group II

1. What does Figure 92 show about the number of people in the greater part of Australia? 2. What parts of the continent are most densely populated? 3. Do most of the people live north of the tropic of Capricorn or south of it? What reason can you give for this fact?

Group III

1. What parts of Australia have over 40 inches of rain a year? 2. What parts of the coast have less than 20 inches? 3. About how much of Australia should you say has too little rain for agriculture without irrigation?

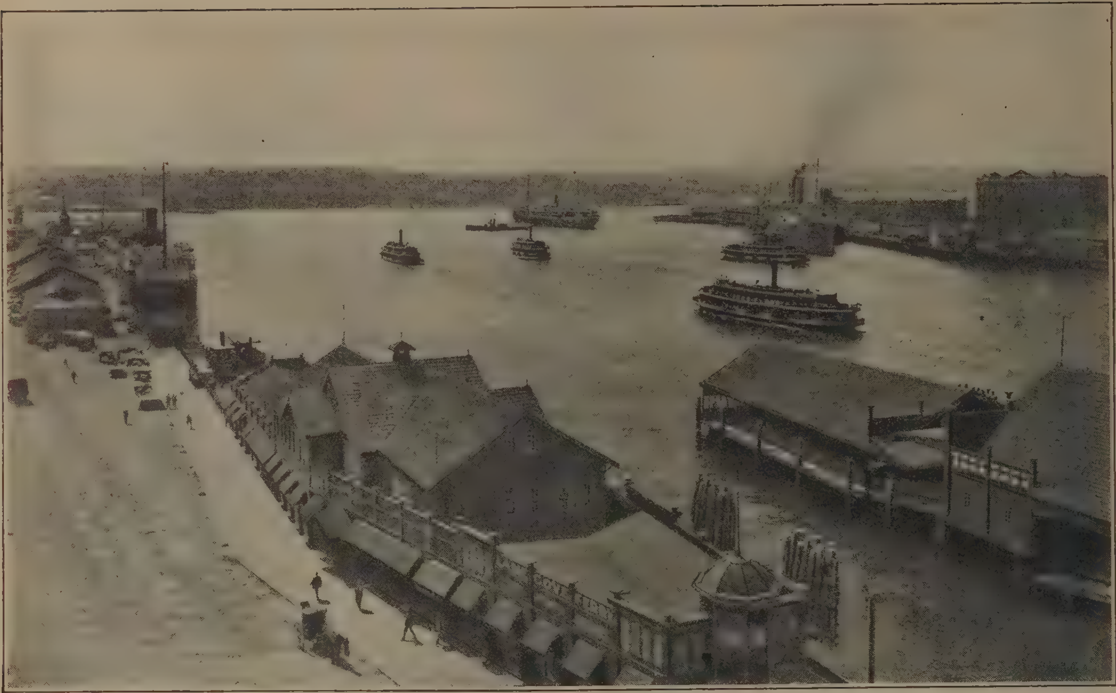


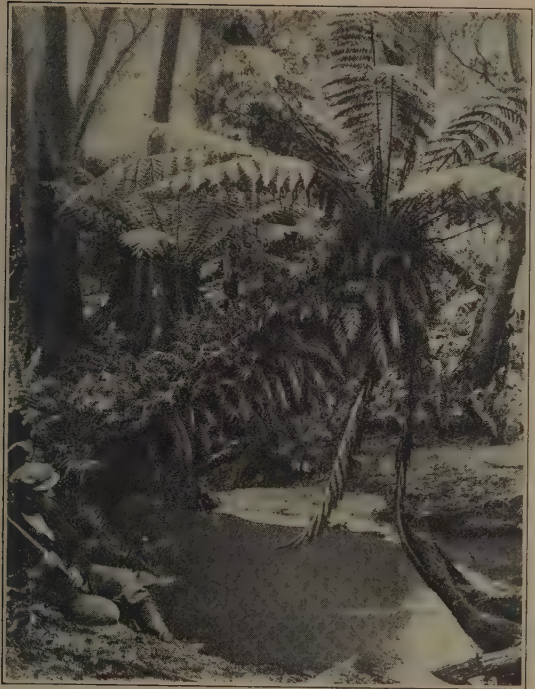
Figure 93. Part of the harbor of Sydney. The harbor is large and very deep, and is well protected from stormy winds and waves from the ocean, for it is nearly surrounded by hilly land. In the picture find three ocean ships, and some small ferryboats which carry passengers back and forth across the harbor.

The native people. The British settlers found themselves in an almost empty continent. The few natives were black-skinned people who lived chiefly by hunting and by digging up the roots of plants which they could eat. There are still some of these "blackfellows," as the British call them, left in Australia, but they live in the interior of the continent and are never seen by visitors to the coastal cities.

The native plants and animals. The British also found themselves in a land of strange plants and animals. There, for the first time, they saw tree ferns and forests of tall eucalyptus trees such as are shown in Figures 94 and 95. There too they discovered the animals that are known as "marsupials," which carry their young in pocketlike pouches on the under side of the body. The kangaroo is the marsupial which we know best.

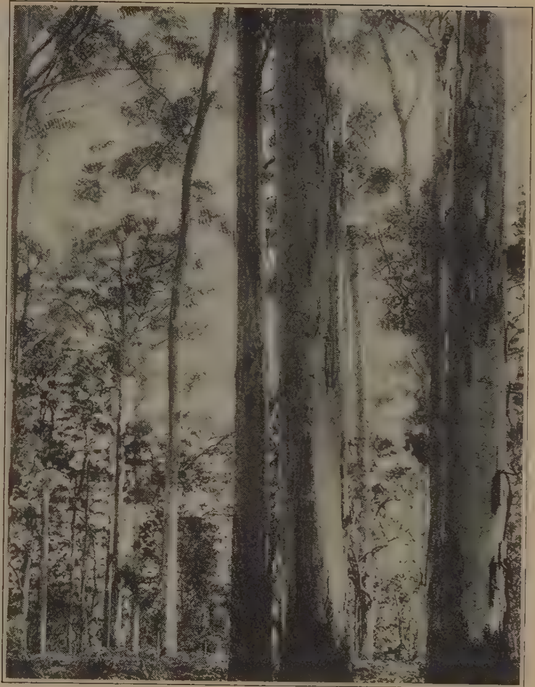
Changes made by the settlers. In the eastern part of Australia the settlers found land suitable for raising crops and live stock; and as time went on, more and more people came from Great Britain to make new homes in the island continent. They brought wheat and other grains from the homeland, and all the common domestic animals — sheep, cattle, horses, pigs, and poultry. Little by little they turned the regions where they settled into farms and ranches. *See Figure 96.*

The rabbit pest. Unfortunately, some of the settlers brought rabbits with them. Rabbits have no natural enemies among the animals of Australia, and so they increased very fast. Soon they began to give the farmers great trouble, for they ate the crops in the fields and the grasses in the pastures. They even destroyed new orchards by eating the bark of the young trees.



Courtesy of Commissioner for Australia, N. Y.

Figure 94. Tree ferns in Australia. Nowhere else in the world do ferns grow so large and tall as they do in the moist eastern part of the island continent.



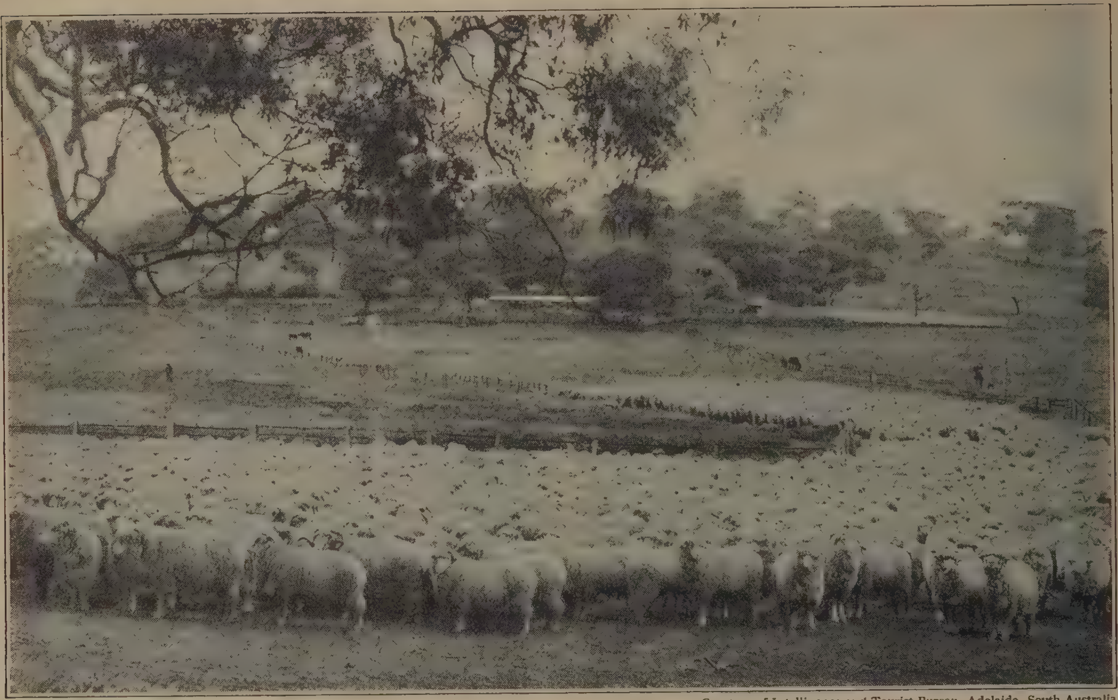
Courtesy of Commissioner for Australia, N. Y.

Figure 95. Eucalyptus trees in Australia. The largest of these trees grow to heights of over 200 feet, like some of the evergreen trees in our Western forests.

The people of Australia have tried all kinds of ways to get rid of the rabbits, but they are still a great pest. Many of the farmers and stockmen have built wire fences all around their fields and pastures to keep the rabbits out, and many employ "rabbiters" to shoot, poison, and trap these destructive little animals.

The discovery of gold. In 1851 gold was discovered in eastern Australia. This led to a series of "gold rushes," and during the next ten years more than half a million men hurried to Australia, hoping to make their fortunes in the gold fields. Although millions of dollars' worth of gold were obtained within a few years, many of the gold-seekers had no success. In time they gave up the search, and many, instead of going home, remained in Australia to become farmers or to raise live stock. Thus the discovery of gold helped greatly to increase the population of Australia.

The growth of the early settlements. The early settlements in Australia were along the coast, and the first towns grew up where there were good harbors. The most important of these towns were Sydney, Melbourne, Adelaide, Brisbane, and Perth. Today these are the largest cities of Australia, and each one is the capital of an Australian state. Find each one of them on the map on page 105 and name the state of which it is the capital. Find also North Australia, Central Australia, the island of Tasmania, and Papua, in the island of New Guinea. Tasmania is a state of Australia, and North Australia, Central Australia, and Papua are territories. Before the World War the part of New Guinea north of Papua, with the neighboring islands, belonged to Germany.



Courtesy of Intelligence and Tourist Bureau, Adelaide, South Australia

Figure 96. A flock of sheep on a ranch in the state of South Australia. The ancestors of the best Australian sheep were brought from England in 1797. How long ago was that? The Australian ranches are very large, and on some of them there are more than 100,000 sheep. For what three different purposes are sheep raised?

Since the war the Australians have had charge of the government of these lands.

The formation of the commonwealth. The states of Australia were for many years separate British colonies. But as time went on, the people felt that a central government would be of great benefit to all, and in 1901 the Commonwealth of Australia was formed, including the entire continent and the island of Tasmania. As you know, the commonwealth is a self-governing British dominion.

The capital city. When the commonwealth was formed, Sydney and Melbourne, the two largest cities, both wished to be the capital of the country. To settle the question, a beautiful location in the mountains between Sydney and Melbourne was chosen for the capital and named Canberra. There was no settlement there, and so a whole new city was laid out. Much remains to be done before the capital will be finished, but some of the government buildings have been built, and the Australian parliament now meets there. *See Figure 97.*

Giving explanations. Give an explanation for each of the following statements:

1. The Dutch were the discoverers of Australia, but the British were the first to settle there.
2. The first settlements in Australia were along the eastern and southeastern coasts.
3. The British settlers made better use of the land than the natives had ever made.
4. The population of Australia increased very fast in the ten years following 1851.

Something to do. Turn to page 336 and make a list of the five largest cities of Australia with their populations. Add the populations, and then make a statement telling about what proportion of the people of Australia live in the five largest cities.

2. CLIMATE AND DISTRIBUTION OF PEOPLE

There is no land in the world where the climate has more to do with the distribution of people than it has in Australia. Do you know why? Begin your study of this problem by working out the map studies in Group II on page 97.

After your study of the map the following statements will not surprise you:

1. More than nine tenths of all the people of Australia live south of the tropic of Capricorn.

2. Four fifths of all the people live within 100 miles of the sea on the eastern, southeastern, and southwestern coasts.

Keep these facts in mind as you read this section, and be on the watch for reasons to explain them.

Courtesy of Commissioner for Australia, N. Y.

Figure 97. The Parliament House in Canberra. Here representatives from the Australian states meet to carry on the government of the country just as our Congress meets in the Capitol at Washington.

The tropical north and the temperate south. You have learned from the maps that the northern part of Australia is in the tropics, while the southern part is in the south temperate zone. Because of this the lowlands at the north are hot lands, while those at the south are much cooler and have frosts during four or five months of the year.

Seasonal temperatures. During January, which is the warmest month in the Southern Hemisphere, the average temperature of most of Australia is over 80°, and in places it is over 90°. Along the southern border it drops to 70°, and in the island of Tasmania to 62°.

In July, the coldest month, the temperature is about 70° along the northern margin of the continent, about 50° along the southern margin, and about 40° in Tasmania. In the south, where frosts occur, the winter temperatures drop at times to 32° or less.

The summer and winter temperatures in southern Australia show that the temperate part of the continent has no great extremes of heat or cold. The winters are much milder there than in the Northern states of our country, and snow seldom falls except in the highest parts of the mountains. The summers are warm, but the weather is seldom uncomfortably hot.

Explain now why most of the people of Australia live in the southern part of the continent. Remember the race to which nearly all the people belong.

Differences in rainfall. Turn to page 97 and work out the map studies in Group III. These will show you that Australia is a land with great differences in rainfall.

Why the interior of Australia has little rain. The map shows that about two thirds of Australia has less than 20 inches of rain. Winds from the ocean bring rain to certain parts of the coast; but since they give up most of their moisture there, the interior of the continent is dry.

The arid Western Plateau. Most of the great desert of Australia is in the Western Plateau. Vast stretches of this region are sandy deserts, and most of the remainder has no vegetation except the poorest of desert shrubs. People cannot live in the desert sections unless they get everything they need from outside, and so there are hundreds of square miles of the plateau without a single inhabitant. In places there are mountains rising above the surface of the plateau. They cause the winds to give up enough moisture so that on their windward sides (the sides toward the wind) there is enough vegetation for a few people to make a living by raising sheep.

Toward the north in the plateau, where there is more rain, there are savannas suitable for raising cattle, but few settlers have chosen to live there. Explain why.

Some arid coast lands. The very dry part of Australia extends to the central part of the western coast, and to the shore of the Great Australian Bight (or Bay) on the south. Therefore these coast lands are almost as thinly populated as the dry interior.

The monsoon rains. The extreme northern part of Australia is a monsoon land, and the heavy rains there are brought by monsoon winds. You will remember that the monsoon winds which bring rain to India blow from the southwest during the northern summer, when the interior of Asia is very warm. The monsoons that bring rain to northern Australia blow from the northwest during the southern summer, when the interior of Australia is very warm. They bring much rain to the northern coast because they come from the ocean.

Turn to Figure 91 on page 97 and find the arrows that stand for the wet monsoons of northern Australia. Find also the arrows that show the direction of the winds in northern Australia during the southern winter. Notice that these are winds from the southeast. Since they blow outward from Australia, they are dry monsoons, and so, during the winter, northern Australia has little rain.

After your visit to India, with its millions of people, you might well expect the monsoon region of Australia to be densely populated. But, as Figure 92 (p. 97) shows, it is one of the very thinly populated parts of the continent. That is because nearly all the people of Australia belong to the white race, and white people find it very hard to do out-of-door work such as farming in the heat of the monsoon climate. So long as the Australians refuse to allow people of the darker-skinned races to settle in their country, the monsoon region will remain thinly populated.

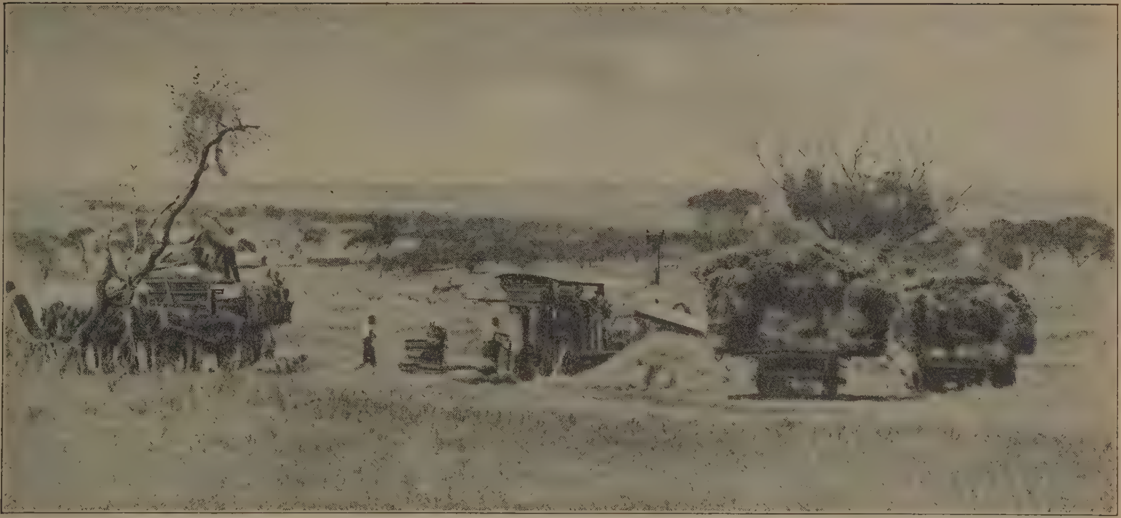
Rain from the southeast trades. The abundant rain on the eastern coast of Australia is brought chiefly by the southeast trade winds, which come from the Pacific Ocean. As they reach the land and are forced to rise they give up much moisture on the seaward side of the eastern highlands. They blow steadily throughout the year, and so the eastern coast has rain at all seasons, and is well suited to farming. For this reason it is one of the most densely settled parts of the continent.

Rain from the westerlies. The southwestern corner of Australia and the southern coast between Adelaide and Melbourne are regions of winter rain and summer drought. Like the southwestern corner of Africa, they extend far enough south to have the westerly winds in the southern winter, when all the wind belts migrate northward. The westerlies, coming from the Indian Ocean, bring rain.

The first rains usually come in May and the last in October, but July is the rainiest month. In the summer the winds that blow over these two regions come from the land and bring little moisture. Thus the six months beginning with November and ending with April are very dry.

Tasmania is far enough south to have winds from the west throughout the year, and so it has rain at all seasons.

Like the temperate section of the eastern coast, the coastal regions which have rain from the westerlies are densely populated, for the climate is healthful for white people and the moisture is sufficient for farming.



Courtesy of Commissioner for Australia, N. Y.

Figure 98. Threshing wheat in southwestern Australia. Notice the wagonloads of wheat, the threshing machine, and the wagon loaded with bags of grain. Australian wheat is winter wheat, planted in the autumn and harvested in the late spring or early summer. What are the autumn months in Australia? the spring months?

Something to prove. Prove that you understand the climate of Australia and its effect on the distribution of population by completing each sentence below correctly:

1. Temperatures grow cooler from north to south in Australia because -----------------.
2. The extreme northern part of Australia has heavy rain in the southern summer because --.
3. The monsoon region of Australia is thinly populated because ------------------------.
4. The eastern coast of Australia has rain at all seasons because ----------------------.
5. Tasmania has rain at all seasons because ------------------------------------.
6. Southwestern Australia and the southern coast between Adelaide and Melbourne have winter rains and summer drought because --.
7. The eastern, southeastern, and southwestern coasts of Australia are the most densely populated parts of the continent because --.
8. The interior of the continent is very dry because ----------------------------------.
9. Very few people live in the interior because --.

3. WORK IN THE WELL-POPULATED REGIONS

Before you read this section, turn to the map on page 105 and find the parts of Australia where you might expect to see the people doing the following kinds of work:

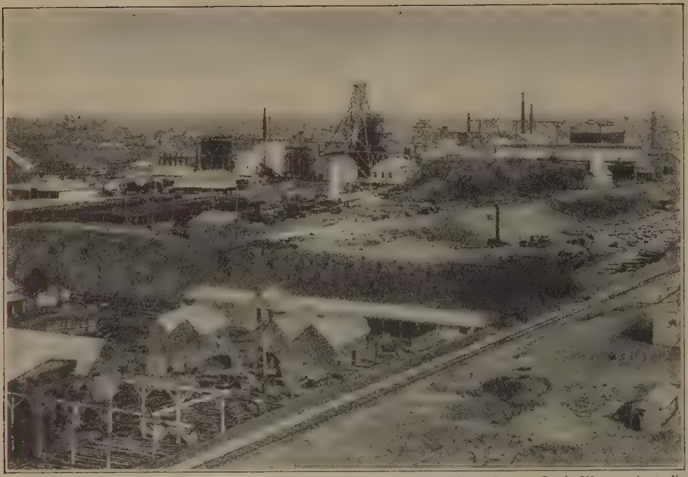
raising wheat
growing fruit
mining coal
raising sugar cane
mining metal ores
raising live stock

Judging from the map, what regions of Australia do you think provide the most products for export to distant lands?

Southwestern Australia

The southwestern corner of the continent. The winter rains from the westerly winds save the southwestern corner of Australia from being a desert, and make it possible for many people to live there. The well-watered region includes the narrow coastal lowland and the bordering part of the plateau.

How work varies with rainfall. Figure 91 (p. 97) shows that the rainfall in southwestern Australia is heaviest along the coast and grows less and less farther inland. Thus



Courtesy of Tourist and Publicity Bureau, Perth, Western Australia

Figure 99. A view of one of the gold mines at Kalgoorlie, in Western Australia. Kalgoorlie is a town of about 5000 people, and its prosperity depends wholly on gold-mining. Why is there no farming or sheep-raising in this part of Australia?

there are distinct rainfall belts crossing this region, which have much to do with the work of the people.

In the coastal belt, where the rainfall is over 30 inches, most of the people carry on mixed farming and dairying. On the hillsides they have planted orchards and vineyards, and fruit is the leading export crop. Farther inland, where the rainfall is from 15 to 25 inches, there is a winter-wheat belt; and still farther inland, where the land is too dry for wheat, there is a sheep-raising belt. Then comes the desert, which is too dry even for grazing. *See Figure 98.*

Perth and its seaport. The largest city and principal business center of southwestern Australia is Perth, which is twelve miles from the coast. This city is the western terminus of the only transcontinental railroad in Australia. Find the railroad on the map on page 105.

The seaport of Perth is Fremantle. Because of its location on the west coast of Australia, Fremantle is the first port of call for steamers from England. Find this seaport on the map on page 105 (*B5*) and name its leading exports.

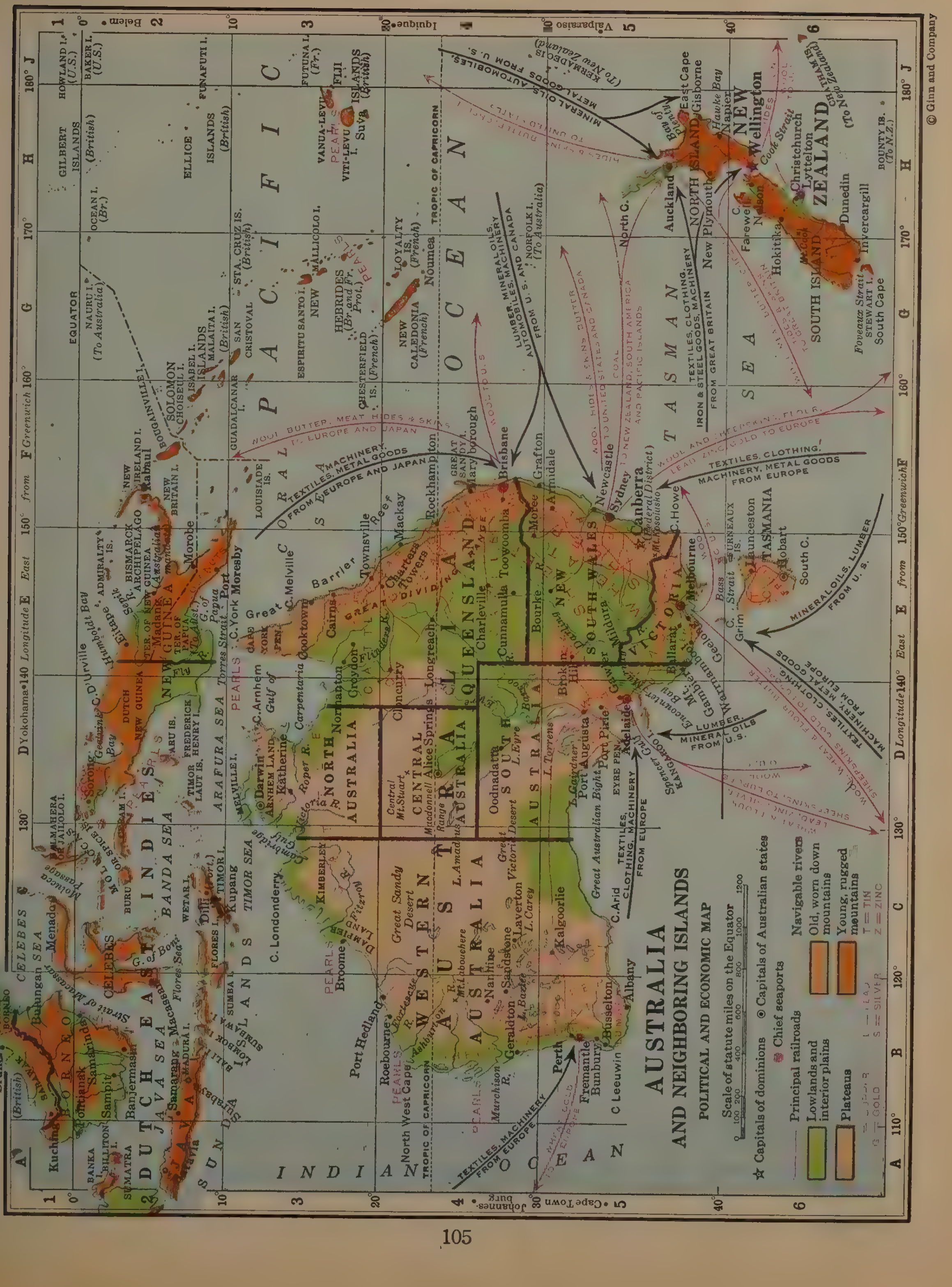
Gold-mining centers. The map shows that gold is one of the leading exports from Perth. Turn to the map on page 105 and find the places where the gold comes from. The gold-mining centers are the only towns of any importance in the great Western Plateau. *See Figure 99.*

At Kalgoorlie and the other gold-mining towns the greatest problem is to obtain food and water for the people. The region is much too dry for farming, and there are no streams to provide water for drinking or irrigation. When the mines were first opened, camels were used to bring supplies from the coast and to carry back the gold, but railroads have now been built. Water for the people of Kalgoorlie is pumped through pipes from a reservoir near Perth, nearly 400 miles away.

The Eastern Coastal Lowlands

The eastern coast of Australia. On the map on page 96 find the two lowland belts on the eastern coast of Australia. Which one is a tropical lowland? Which is a temperate lowland? Along the remainder of the coast the mountains come so close to the sea that the coastal lowlands are too narrow to be shown on the map. What have you learned about the rainfall on this coast? What kinds of work do you think are important here?

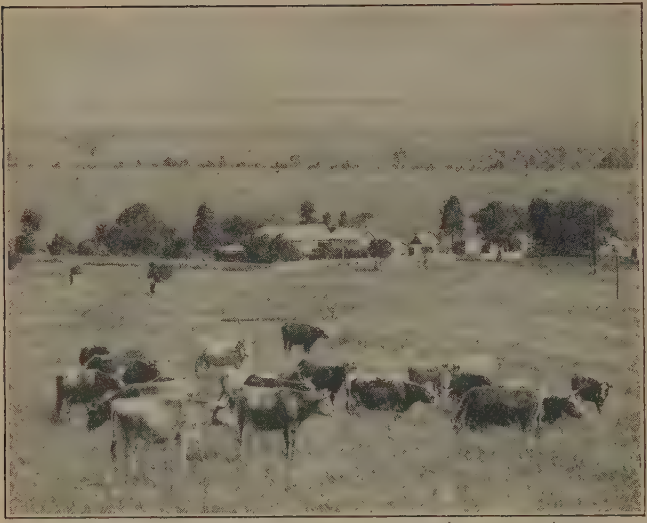
A mixed-farming region. The temperate coastal lowland of New South Wales is one of the best mixed-farming regions of Australia. As we travel through it, we shall see fields of corn, hay, alfalfa, and vegetables, and many herds of dairy cows. The region is especially well suited to dairying because the



AUSTRALIA AND NEIGHBORING ISLANDS

POLITICAL AND ECONOMIC MAP

Scale of statute miles on the Equator
100 200 400 600 800 1000 1200
★ Capitals of dominions
⊙ Capitals of Australian states
● Chief seaports
Principal railroads
Navigable rivers
Lowlands and interior plains
Plateaus
Old, worn down mountains
Young, rugged mountains
G = GOLD
C = COPPER
L = LEAD
S = SILVER
T = TIN
Z = ZINC
© Ginn and Company
WESTERN AUSTRALIA
NORTH AUSTRALIA
CENTRAL AUSTRALIA
SOUTH AUSTRALIA
QUEENSLAND
NEW SOUTH WALES
VICTORIA
TASMANIA
NEW ZEALAND
NORTH ISLAND
SOUTH ISLAND
NEW GUINEA
DUTCH EAST INDIES
INDIAN OCEAN
PACIFIC OCEAN
CORAL SEA
TASMAN SEA
ARAFURA SEA
TIMOR SEA
BANDA SEA
JAVA SEA
CELEBES SEA
Perth
Adelaide
Melbourne
Sydney
Brisbane
Hobart
Canberra (Federal District)
Darwin
Wellington
Auckland
TEXTILES, MACHINERY FROM EUROPE
WOOL, BUTTER, MEAT, HIDES & SKINS TO EUROPE AND JAPAN
TEXTILES, METAL GOODS, MACHINERY FROM EUROPE AND JAPAN
LUMBER, MINERAL OILS, AUTOMOBILES, MACHINERY FROM U. S. AND CANADA
MINERAL OILS, AUTOMOBILES, METAL GOODS FROM U. S.
TEXTILES, CLOTHING, IRON & STEEL GOODS, MACHINERY FROM GREAT BRITAIN
MINERAL OILS, LUMBER FROM U. S.
LUMBER, MINERAL OILS FROM U. S.
TEXTILES, CLOTHING, METAL GOODS, MACHINERY FROM EUROPE
WOOL, WHEAT & FLOUR, BUTTER, GOLD, SHEEPSKINS TO EUROPE
LEAD, ZINC, SILVER, FLOUR TO EUROPE
WOOL AND SHEEPSKINS, FLOUR, LEAD, ZINC, GOLD TO EUROPE
TROPIC OF CAPRICORN
EQUATOR
Longitude East from Greenwich



Courtesy of Commissioner for Australia, N. Y.

Figure 100. A dairy farm near the coast in New South Wales. Notice the farmer's house and farm buildings in the distance. Why does he not have a silo, as most dairy farmers in our country do? Why does eastern Australia provide good markets for dairy products?

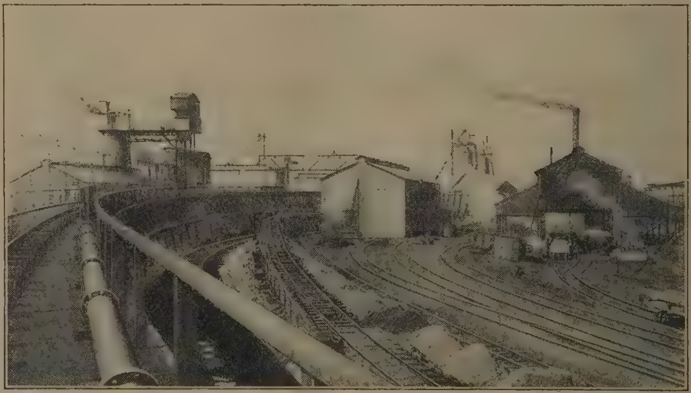
mild climate allows the cows to graze out of doors at all seasons, and the abundant rain keeps the pasturage fresh and green throughout the year. *See Figure 100.*

In this region we shall also see many orchards of apples, peaches, plums, and pears, and other temperate-zone fruits, and many groves of orange trees. What do the orange trees tell about the danger of frost in the lowland?

The largest city of Australia. On the eastern margin of the temperate coastal lowland is Sydney, the largest city and leading seaport of Australia. Sydney has over a million people, and is one of the great cities of the world. Only three cities in the British Empire — London, Calcutta, and Bombay — are larger. Find Sydney on the map on page 105 (*F5*) and notice that it is the center of the railroad system of New South Wales. What reasons can you suggest for its growth?

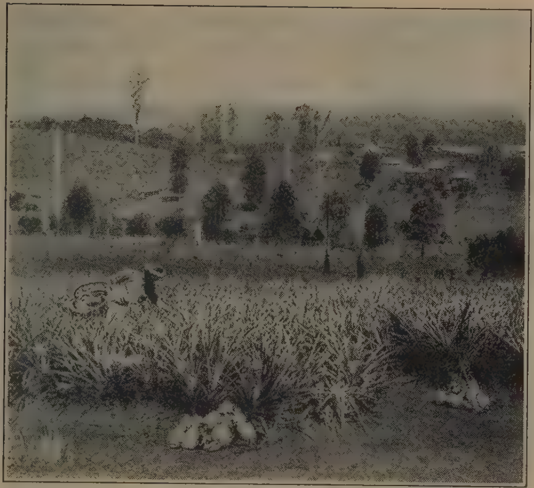
Sydney owes its growth as a port to the fact that it has one of the finest harbors in the world and is an ocean gateway for much of the richest and most densely populated part of Australia. To its wharves come ships from all over the world, bringing goods to be distributed by rail to all parts of New South Wales and to other states of Australia. When the ships sail away, they carry Australian products which have come to Sydney for export. Name the leading exports by using the map on page 105.

On the hilly shores overlooking the harbor of Sydney you will see many fine houses and many attractive bungalows surrounded by beautiful gardens, and in the business section you will find office buildings, banks, and stores much like those in our own cities. Along the water front, near the wharves and docks, you will find large warehouses, and huge grain elevators where millions of bushels of wheat are stored, waiting to be shipped away. Here too you will see shipyards, flour mills, and many other kinds of manufacturing plants.



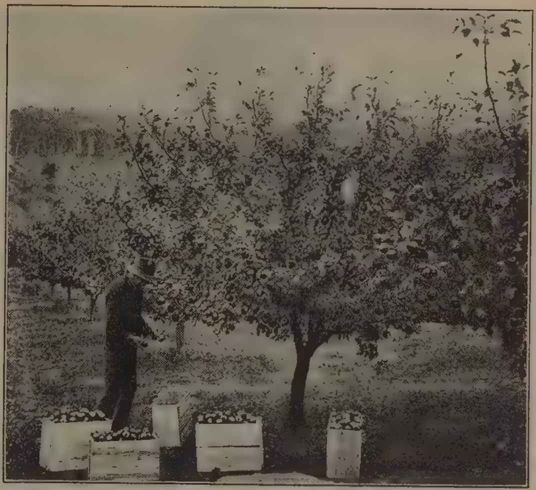
Photograph from Ewing Galloway, N. Y.

Figure 101. Part of the iron-and-steel plant at Newcastle. The blast furnaces here produce large quantities of pig iron, which is used in the manufacture of steel for many different purposes.



Courtesy of Commissioner for Australia, N.Y.

Figure 102. A farmer in Queensland gathering pineapples. Where in South Africa did you see pineapple plantations? What likeness is there between that part of South Africa and this part of Australia?



Courtesy of Commissioner for Australia, N.Y.

Figure 103. A fruit-grower in Victoria picking apples. What season of the year was it in the Northern Hemisphere when this picture was taken? What advantages of climate has Victoria for fruit-growing?

Coal and manufacturing. On the map on page 105 find Newcastle, north of Sydney (*F5*). The best coal in Australia is mined between Sydney and Newcastle, and it has helped to make both cities manufacturing centers. At Newcastle there is a large iron-and-steel plant to which iron ore is brought from South Australia. Iron and steel from this plant are used in railroad repair shops, machine shops, and shipyards at Sydney. *See Figure 101.*

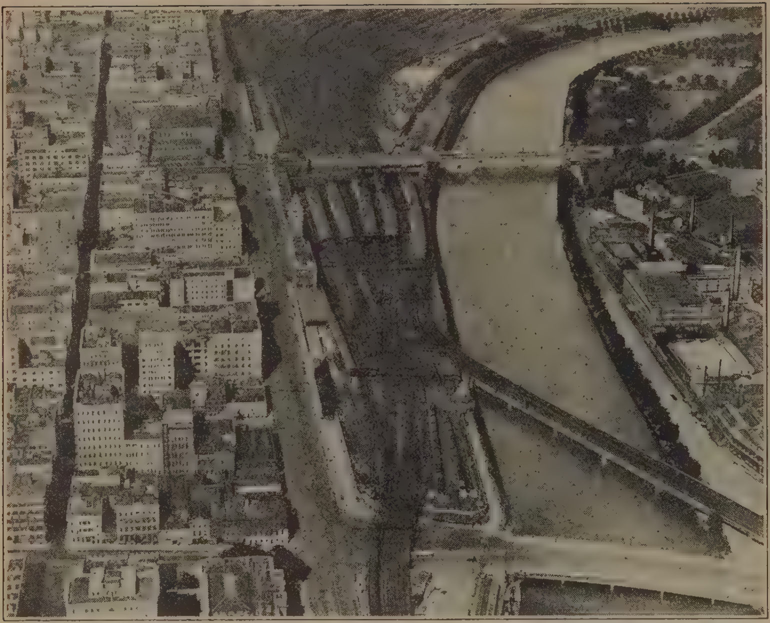
A tropical farming region. On the tropical coastal lowland of Queensland there are sugar plantations which supply most of the sugar needed by the Australians. The people of this region also raise corn, rice, and many tropical fruits such as pineapples and bananas. *See Figure 102.*

This hot, moist lowland is suitable for all kinds of tropical crops, for which there is a good market in temperate Australia. Land is cheaper here than farther south, yet the region is much less densely populated than the coastal lowland of New South Wales. Can you explain why?

The capital of Queensland. On the map on page 105 find Brisbane, the capital and largest city of Queensland (*F4*). Notice that it is near the southern boundary of Queensland and is the chief seaport and railroad center of that state. Why do you think the largest city of Queensland has grown up here rather than farther north on the coast? Judging from the exports of Brisbane, what do you think is the most important kind of work in southern Queensland?

Along the water front at Brisbane you could visit meat-packing plants, and in a neighboring town you could visit woolen mills. These manufacturing plants should make you feel still more sure that your answer to the question in the last paragraph was correct. Explain why.

The Valley of Victoria. On the map on page 96 find the Valley of Victoria, in which the great city of Melbourne is located (*E5*). This valley has a mild, pleasant climate with sufficient rain for farming and is one of the more densely populated regions of Australia. The eastern part is chiefly a dairying section,



Australian Government Photograph

Figure 104. An airplane view of Melbourne, showing the railroad yards and the river which flows through the city into the bay. The business district is at the left, and the manufacturing district is across the river, at the right. What advantages has Melbourne for manufacturing?

while the western part is used more largely for raising beef cattle and sheep. Large quantities of wheat and fruit also are raised in the western section. *See Figure 103.*

Judging from the work of the people in the Valley of Victoria, what do you expect the leading exports of Melbourne to be? Check your answer by the map on page 105.

The capital of Victoria. Melbourne is the second largest city of Australia, and has nearly a million people. The map shows that it is located at the inner end of a large bay which extends far into the Valley of Victoria, and that it is the center of the railroad system of the state. Thus it is the ocean gateway not only for the valley but also for the southern part of the Great Plains, beyond the Victorian Highlands. *See Figure 104.*

Melbourne, like Sydney, is a manufacturing center. Among its manufactures are mining machinery, farming tools and machinery, and railroad locomotives and cars. Can you explain why these industries have grown up in Melbourne?

A travel test. 1. If you were to travel from Perth to Kalgoorlie on the train, you would cross the rainfall belts of southwestern Australia which so largely determine the work of the people. Arrange the phrases below in the order in which you would see the things they describe.

wheat farms
sheep ranches
useless desert lands
gold-mining centers
dairy farms and fruit orchards

2. Give reasons why the people of each belt carry on the kind of work which you have observed there.

Some things to explain. Give an explanation for the fact that

1. More immigrants, or new settlers, in Australia choose to live in the coastal lowland of New South Wales and the Valley of Victoria than in the coastal lowland of Queensland.

2. The Valley of Victoria and the coastal lowland of New South Wales can support large numbers of people.

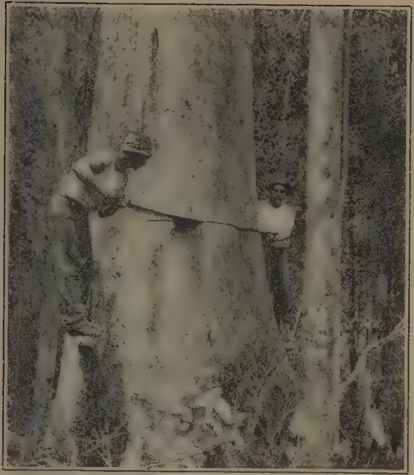
3. The state of Queensland supplies most of the sugar used by the Australians.

4. Brisbane, Sydney, and Melbourne are railroad centers.

5. Sydney is better located than Brisbane or Melbourne to serve as an ocean gateway for all parts of the more densely settled section of eastern Australia.

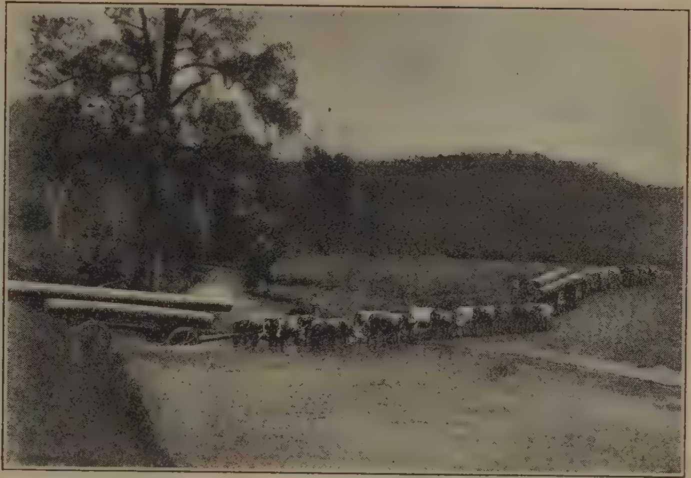
6. Sydney has become a leading manufacturing center in Australia.

7. The agricultural products of southwestern Australia are like those of the southwestern part of the Union of South Africa.



Courtesy of Commissioner for Australia, N. Y.

Figure 105. Australian lumbermen cutting down a giant tree. Notice the size of the trunk compared with the men.



Courtesy of Commissioner for Australia, N. Y.

Figure 106. Hauling logs from the forest to a sawmill in Queensland. Six or seven pairs of oxen are needed to pull three or four huge logs up and down the rough slopes and through the streams.

The Highlands of Eastern Australia

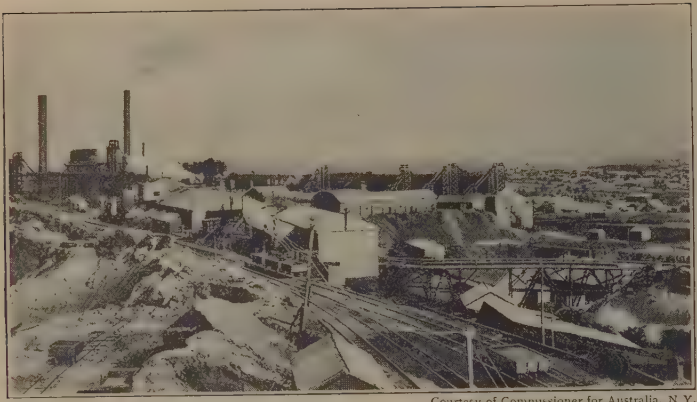
A mountain barrier. Like the Appalachian Highlands of our country, the East Australian Highlands and the Victorian Highlands form a barrier between the coast lands and the plains farther inland. It was some time before the early settlers found routes across the mountains to the interior of the continent, and much longer before railroads were built. Today railroads run from the seaports through the mountains to towns in the Great Plains.

Rainfall and forests. Since the seaward slopes of the mountains have much rain, they are covered with forests, and lumbering is carried on in many places. Many of the lumbering camps are far from the railroads, and the heavy logs have to be taken to the sawmills by ox-teams. Pines and other softwood trees grow in a few places in the highlands, but most of the forests are of hardwoods. For this reason Australia has to import softwood lumber from countries in the north temperate zone. *See Figures 105 and 106.*

Farming and stock-raising in the highlands. Between the ranges of the eastern highlands there are valleys and plateaus which provide fairly large stretches of level land and are used for farming. The principal crops that the farmers raise are the same as those we saw on the temperate coastal lowland,—grain, alfalfa, fruits, and vegetables. Dairying is very important, and the farmers send much butter to the coastal cities.

Many herds of beef cattle graze in the moister, eastern section of the mountains, providing large quantities of meat and hides for export. The drier parts are better for sheep than for cattle, and the thickest "sheep population" in Australia is on the western slopes of highlands in New South Wales and the northern slopes in Victoria.

Mineral wealth. It was the discovery of gold in the eastern highlands that led to the rapid increase in the population of Australia from 1851 to 1861. Less gold is now mined than formerly, for in places the ores have given out, but it is still an important product of the highlands. Turn to the map on page 105 and find the chief gold-mining centers in this region. What other metal ores are mined in the eastern highlands?



Courtesy of Commissioner for Australia, N.Y.

Figure 107. A portion of the famous silver-lead mines at Broken Hill in Australia. Find this mining center on the map on page 105 (*E5*) and name another kind of metal ore which is mined there.

By far the most valuable mineral product of Australia today is coal. Most of it comes from the field in New South Wales. This field contains more coal than any other field in the Southern Hemisphere. What do you find on the map on page 105 that shows that the Australians mine more coal than they need for their own use?

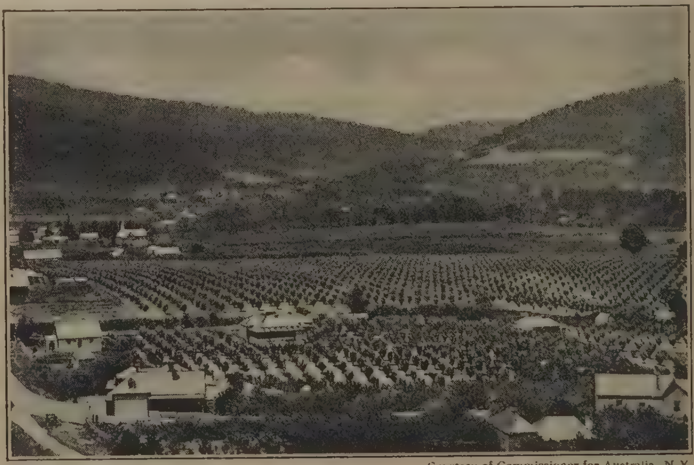
The South Australian Highlands. On the map on page 96 find the South Australian Highlands. Here, too, rich deposits of metal ores have been found. In the eastern part of the region is Broken Hill, where some of the richest silver-lead mines in the world are located. These mines have attracted so many people that Broken Hill has a population of more than 30,000. *See Figure 107.*

Farther south, near Spencer Gulf, there are rich copper mines, and at Iron Knob, on the opposite side of the gulf near Port Augusta, there is a whole hill of high-grade iron ore. The ore mined at Iron Knob is shipped to the iron-and-steel works at Newcastle.

In the valleys among the South Australian Highlands the people raise sheep and carry on mixed farming. In the southern part of the region the people raise much wheat and fruit.

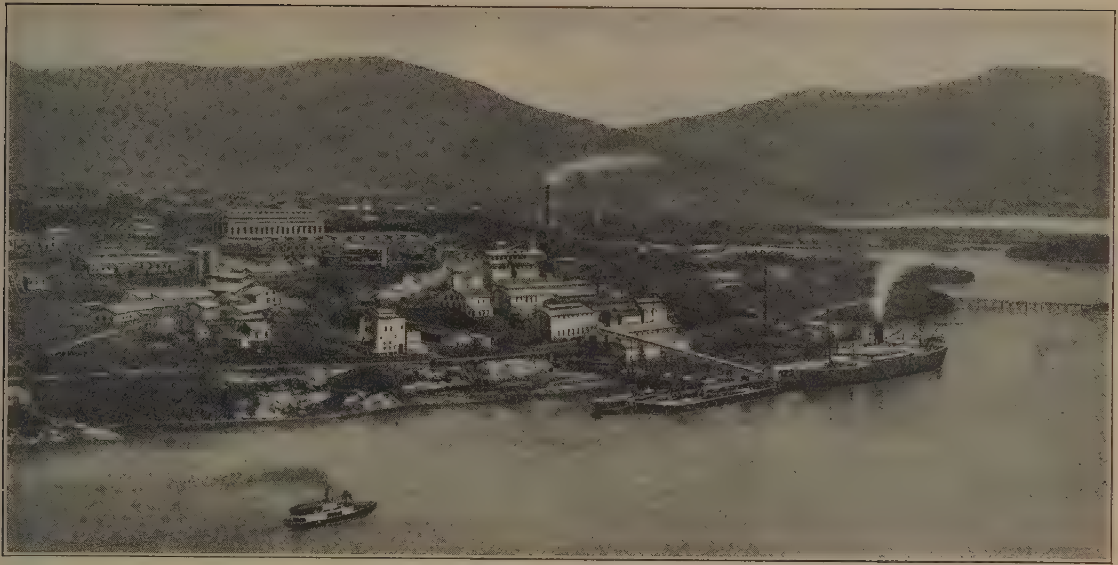
The capital of South Australia. The capital and largest city of South Australia is Adelaide. It is a very attractive city, located a few miles inland on a small river which empties into a large bay. An outer harbor, beyond the river mouth, makes Adelaide a seaport. Find this city on the map on page 105 (*D5*). How is its export trade connected with work in the South Australian Highlands?

Tasmania. The island state of Tasmania is part of the eastern highlands of Australia, separated from the mainland by Bass Strait. Therefore the surface is hilly and mountainous. In the western part of the island, which is the more rugged part, there are several important mining centers. The tin mines are more valuable than any others, but ores of copper, silver, gold, and lead also are obtained.



Courtesy of Commissioner for Australia, N.Y.

Figure 108. Apple orchards in a valley among the mountains of Tasmania. At what season of the year in the Northern Hemisphere do apples shipped from Tasmania reach the markets in England?



Photograph from Ewing Galloway, N. Y.

Figure 109. The zinc plant near Hobart, in Tasmania. This plant provides work for over 1000 men. It is located on the shore of the harbor of Hobart, and ships bring the zinc ores directly to its wharves from Adelaide. Find Hobart on the map on page 105 (*E6*) and estimate the distance from there to Adelaide.

The "orchard state." You already know that Tasmania has plentiful rainfall from the westerly winds. As you would expect, most of the people live in the valleys, where the land is level enough for farming. Most of the farmers carry on mixed farming, and many raise apples as a special money crop.

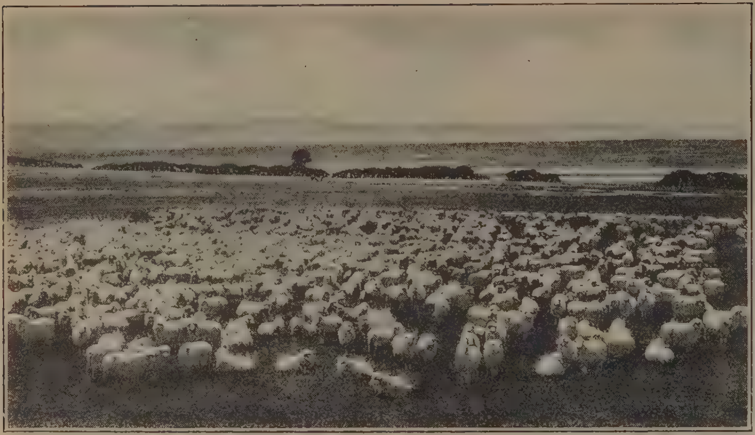
So many apples are raised in Tasmania that it is often called the "orchard state" of Australia. Every autumn thousands of barrels of apples are shipped to England, where they bring a good price because they arrive at the season when the home supply of apples is low. All the fruit-growers of Australia enjoy this same advantage in sending fresh fruit to England. *See Figure 108.*

During the last few years the Australians have been using some of their fruit to make jams for export to England. This has proved to be a profitable business, for the British serve jams regularly at breakfast.

Hobart. Hobart, on the southeastern coast of Australia, is the capital, the largest city, and the chief seaport of Tasmania. In one of the suburbs of Hobart is the zinc plant shown in Figure 109. This is the largest plant in the world for refining zinc by means of electricity. Most of the zinc refined here comes from Broken Hill, and the electricity comes from a great hydroelectric plant in the north-central part of Tasmania. Can you explain what advantages Tasmania has for the making of electricity through the use of water power?

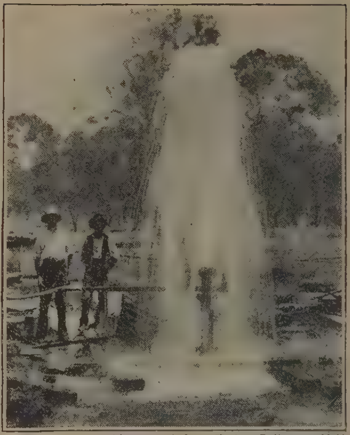
Making choices. From the sentences given below select those that you think give the most important reasons why many people have settled in the mountains of eastern Australia.

1. The mountains have a rough surface.
2. They have plentiful rainfall.
3. They are a natural barrier.
4. The mountains have much mineral wealth.
5. They have large stretches of forests.
6. Their scenery is beautiful.
7. The mountains have many rivers.
8. They are near the seacoast.
9. They are well supplied with railroads.



Courtesy of Commissioner for Australia, N. Y.

Figure 110. Part of a large flock of sheep on the Great Plains of Australia. Large numbers of the Australian sheep are of the kind known as Merino, and they produce the finest quality of wool.



Photograph from Ewing Galloway, N.Y.

Figure 111. Water coming from an artesian well 3500 feet deep, in the Great Plains of Australia.

4. THE GREAT PLAINS OF AUSTRALIA

Turn to the map on page 96 and study the location of the Great Plains of Australia. Notice that they lie between the eastern highlands and the interior desert. What does Figure 91 tell you about the rainfall in this region?

Like our own Great Plains, the Great Plains of Australia are grasslands with few trees except along the streams. What kinds of work do you expect to find the people doing?

Cattle pastures. The thinly settled savannas in the northern part of the Great Plains are used chiefly as pastures for beef cattle. Most of the cattle of Australia, however, are found in the well-watered eastern highlands and in the temperate coastal lowlands.

Sheep pastures. The northern part of the Great Plains is too warm for sheep, but farther south on the plains and on the bordering slopes of the eastern highlands more sheep are pastured than in any other area of equal size anywhere in the world.

Nearly all the sheep ranches, or sheep stations, as they are called in Australia, are found where the yearly rainfall is between 10 inches and 30 inches. Many of the larger stations cover as much as 150 square miles, and altogether there are in Australia about 100,000,000 sheep. *See Figure 110.*

Problems of the sheep ranchers. There are no farmers or stockmen in the world who watch the weather more anxiously than the sheep ranchers of Australia. During a very dry year the grass withers, water is scarce, and the sheep die by thousands. Such conditions often mean ruin for many of the ranchmen. A year with good rainfall brings an abundance of grass and sufficient water, and these, in turn, mean prosperity for the ranchmen.

In the drier pasture lands the problem of getting enough water for the sheep is always serious. Fortunately, the ranchmen in most parts of the Great Plains can get water from beneath the ground by drilling deep wells. Some of the wells are *artesian wells*, which means that the water flows out of them without having to be pumped. Even the wells, however, sometimes fail to provide water in a very dry season. *See Figure 111.*

In the Great Plains the millions of rabbits give the ranchmen much trouble, for seven rabbits will eat as much grass as one sheep. Most of the pastures have to be fenced with wire to keep the rabbits out, and the ranchmen employ men called "boundary riders" to keep the fences in good condition.

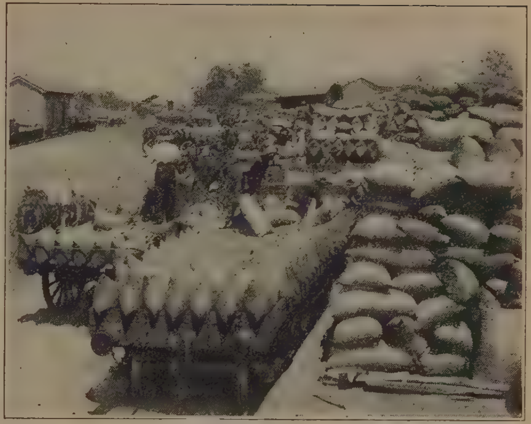
The importance of sheep-raising. Sheep-raising was one of the first kinds of work undertaken by the British settlers in Australia, and it is the leading industry of the commonwealth today. The sheep are raised for both wool and meat, though the wool is much the more important product. Australia is the leading wool-producing country of the world, and wool is by far its most valuable export.

Wheat lands. Among the farm products of Australia wheat is the most valuable export crop. The most important wheat lands are in the southern and southeastern parts of the Great Plains and on the lower slopes of the bordering mountains. The rainfall in these lands varies from 10 to 40 inches, and in the drier parts the farmers use dry-farming methods. When there is a little more rain than usual, the wheat farmers get larger crops; when there is less rain than usual, their crops are small. Thus their prosperity depends largely on the rainfall.

The Australian farmers do their plowing, planting, and harvesting with the best of modern machinery. They plant their seed in April and usually begin to harvest the grain late in December. Do they raise spring wheat or winter wheat?

About half the Australian wheat crop is used at home. The rest is exported, chiefly to Europe, and Australia stands fourth among the wheat-exporting countries of the world. Only Canada, the United States, and Argentina export more. *See Figure 112.*

Irrigated lands. On the map on page 105 find the plains along the lower course of the Murray River and its tributaries. These plains have less than 20 inches of rainfall, but they are becoming prosperous mixed-farming lands through irrigation. Water from artesian wells and also from the streams is used for this purpose. Plans for irrigating much larger areas have been made, and work is under way on three great projects for storing the waters of the Murray-Darling system in great reservoirs and carrying them to the farm lands through long canals.



Courtesy of Commissioner for Australia, N.Y.

Figure 112. Loading wheat at a railroad station in the Great Plains of Australia. From the map on page 105 name the two seaports which lead in the export of wheat from eastern Australia.

Some things to explain. Explain why

1. Temperatures grow cooler from north to south in the Great Plains.

2. Rainfall grows less from east to west in the Great Plains.

3. The most important kind of work in the Great Plains is stock-raising.

4. More cattle than sheep are raised in the northern part of the Great Plains.

5. In the region as a whole, far more sheep than cattle are raised in the Great Plains.

6. Most of the sheep are found in the eastern and southeastern parts of the plains and on the bordering mountain slopes.

7. The wheat lands of the Great Plains are in the southern and southeastern parts of the region and on the lower slopes of the bordering mountains.

8. The prosperity of the sheep-raisers and the wheat farmers varies from year to year with the rainfall.

5. MANUFACTURING, TRANSPORTATION, AND TRADE

Give what you think are the correct answers to the following questions, and check them as you read this section.

1. What advantages has Australia for the development of manufacturing?
2. What is the greatest handicap to transportation in Australia?
3. What kinds of work in Australia supply the leading exports?

The growth of manufacturing. Since Australia has coal and produces iron ore and other valuable raw materials, it is natural that the people should wish to use them to manufacture still more valuable products. Nevertheless manufacturing has grown rather slowly. At present the leading industries are those which prepare raw materials for home use and export, such as meat-packing, butter-making, and the refining of ores, and those which supply products which all the people of the country need, such as the making of clothing and shoes.

The greatest handicap to manufacturing is the small population of the country, for a small population means a small home market for all manufactured products except those which everyone uses. That explains, for example, why Australia has no automobile factories and why the people do not manufacture many kinds of heavy machinery. With its abundant coal and its iron ore and other raw materials Australia is well equipped to become a manufacturing country. But the growth of manufacturing will depend on the growth of the home markets, and therefore on the growth in population.

The railroads of Australia. You have discovered from the map that each of the more important states of Australia has a railroad system which centers in the capital city on the coast, and that a few railroads in the east extend across the highlands into the Great Plains. The interior of the continent has almost no railroads, and there is only one transcontinental line.

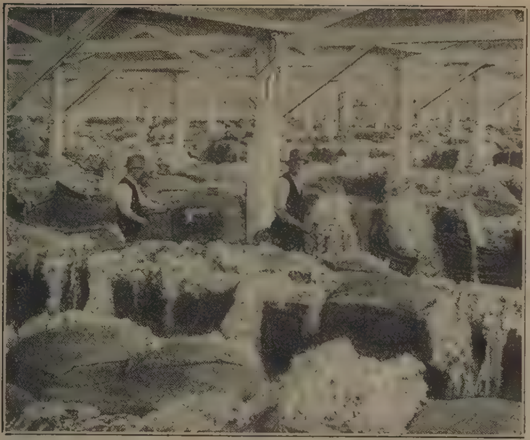
The transcontinental railroad connects the state railroads of South Australia with those of Western Australia, making it possible to travel all the way from Perth to cities on the eastern coast by train. This railroad, as you know, runs across the southern part of the desert of Australia, and there is a stretch of 1000 miles where it does not cross a single permanent stream. In this stretch the problem of getting water for the locomotives and passengers is very difficult.

The Australians are now building another transcontinental railroad from north to south through the heart of the continent. It starts at Port Augusta in South Australia, and when completed will run to Darwin, the capital of North Australia. Look on the map on page 105 and see how much of this railroad has been completed.

A handicap to railroad transportation. Travel and transportation by train in Australia are slower than in Europe or the United States because the railroads of the different states do not use the same gauge. That means that the rails of the different lines are not the same distance apart. Some of the railroads have a narrow gauge of 3 feet, 6 inches; others a "standard gauge" of 4 feet, 8½ inches, as we do in the United States; and still others a broad gauge of 5 feet, 3 inches.

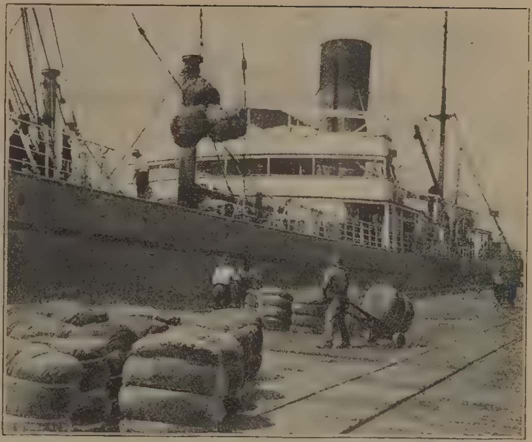
These differences are unfortunate, for locomotives and cars built for one gauge cannot run on rails of another gauge. At the places where the gauge changes, passengers have to change cars, and freight has to be unloaded from the cars of one line and loaded on those of another.

Transportation by air. Since so much of Australia is without railroads, it is natural that the people should be much interested in



Australian Government Photograph

Figure 113. A storage warehouse for wool at Adelaide. Here wool from many far-away ranches is stored and inspected before it is shipped to distant countries.



Australian Government Photograph

Figure 114. A ship from London being loaded with bales of wool at Brisbane. To what cities in England is the wool likely to be sent after it reaches London?

the use of airplanes for transportation. Already they have established regular airplane service to connect places on the west coast with Perth, and places in the Great Plains with railroads that run to the eastern seacoast.

The trade of Australia. From the map on page 105 make a list of the leading exports of Australia. Which ones come from the ranches and farms? Which ones come from the mines? Which are foodstuffs? Which are raw materials?

Wool, wheat, butter, meat, hides and skins, and other products of the ranches and farms are the most valuable exports, and gold, lead, zinc, and other products of the mines are next. These raw materials and foodstuffs go largely to Great Britain and other countries of western Europe and to the United States. Explain why.

Now study the imports of Australia. What do the Australians buy in large quantities from our country? from Great Britain and other European countries? What country of Asia supplies some of the imports?

It is clear from the imports that the things that the Australians need most from distant lands are manufactured goods. They need also gasoline and other mineral oils, for as yet no petroleum has been discovered in this continent. Why do they need lumber?

Trade with the home country. You will probably not be surprised to learn that Great Britain takes about two fifths of the exports of Australia and supplies about one third of the imports. The home country finds in the commonwealth a very valuable source of raw materials for its factories and of foodstuffs for its people, and a good market for some of its manufactured goods. *See Figures 113 and 114.*

LANDS TO THE NORTH GOVERNED BY AUSTRALIA

New Guinea and the neighboring islands. On the map on page 105 find the part of New Guinea which is governed by the Australians. The Bismarck Archipelago and several other islands east of New Guinea are also under Australian control. Most of the people of these tropical lands are dark-skinned natives who live largely on bananas, coconuts, and other tropical fruits, and on vegetables which they raise in small gardens. There are also a few Europeans, who are interested in developing coconut plantations and rubber plantations.

Matching cities and states. Each place named in the left column below is the capital and largest city of one of the Australian states named in the right column. Match the cities with the states correctly.

Sydney
Melbourne
Adelaide
Brisbane
Perth
Hobart

5 Western Australia
4 Queensland
6 Tasmania
1 New South Wales
2 Victoria
3 South Australia

A selection test. Select the word or phrase which makes each statement below correct:

1. The two most important kinds of work in Australia are

mining and manufacturing.
fishing and lumbering.
stock-raising and farming.

2. The animals raised in largest numbers in Australia are

sheep. pigs. cattle.

3. The leading grain crop of Australia is

corn. ✓wheat. oats.

4. The most valuable mineral product is

gold. coal.✓ lead.

5. The leading exports of Australia are products of the

mines. ✓ ranches and farms. forests.

6. The most valuable export of all is

wheat. butter. ✓ wool.

7. The imports of Australia are chiefly

/manufactured goods. foodstuffs. raw materials.

Some things to explain. Explain why

1. The British buy large quantities of wool and wheat from Australia.

2. Fresh fruit and fruit jams from Australia find a good market in Great Britain.

3. Most of the Australian imports from Great Britain are manufactured goods.

4. Most of the imports of mineral oils are from the United States.

5. The Australians trade more largely with the British than with any other nation.

Sentences to complete. 1. Stock-raising is more important than farming in Australia because much of the well-watered land is ----------, and much of the level land is too ---- for crops.

2. The prosperity of the people of the Great Plains of Australia varies from year to year with the -------- because ------------------.

3. Vast stretches of the interior of Australia will always be useless lands because ---------.

4. The tropical northern part of Australia is likely to remain ------ populated unless ---- ---------------------------------------.

5. Airplane transportation will probably become very important in Australia because ---- --.

Can you explain these differences? 1. Read the following comparisons carefully:

a. Australia is almost as large as the United States.

b. The United States has about

(1) twenty times as many people as the Commonwealth of Australia;

(2) twenty times as much land used for raising crops;

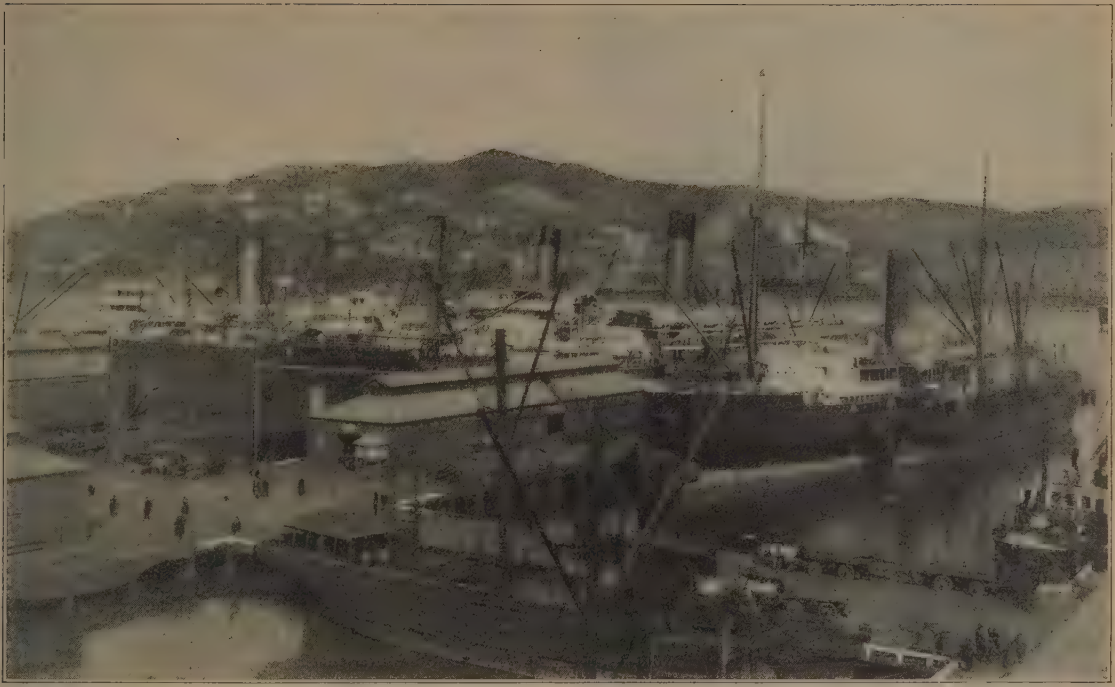
(3) ten times as many miles of railroads;

(4) seven times as many dollars' worth of foreign trade.

2. Explain why Australia has much more land unsuited to farming than the United States has. Do you think that Australia will ever be able to support as many people as the United States does? Give reasons for your answer.

3. Explain why the railroad mileage of Australia is so much less than that of the United States. Do you think the interior of Australia will ever be covered with a network of railroads, as the interior of the United States is? Give reasons for your answer.

4. The fact that Australia, with about one twentieth as many people as our country, has about one seventh as much foreign trade shows that the Australians depend more largely on foreign trade than we do. What does that suggest about their ability to supply their own needs compared with our ability to supply our needs? What reasons can you give for this difference?



Courtesy of Wellington Harbour Board

Figure 115. Ships in the harbor of Wellington. Here you will see boats from other parts of the islands of New Zealand, as well as ships from distant lands. Although Auckland carries on more foreign trade than Wellington, this city is the more important center for trade between different parts of New Zealand. In what way is its location better for this domestic, or home, trade than is the location of Auckland?

VI. THE DOMINION OF NEW ZEALAND

Foreword. At Sydney we can board a ship which will carry us almost directly east to Auckland, the largest city of the British dominion of New Zealand. The distance from Sydney to Auckland is 1280 miles, or about one third of the distance from New York to London. Trace our route on the map on page 105. In the harbor at Auckland we shall see ships from Great Britain, and probably some from the United States and Canada, for most of the New Zealanders are of British descent and trade chiefly with the English-speaking people of the world.

To the people of the British Isles the islands of New Zealand are the "antipodes," which means that these islands are on the opposite side of the earth from the British Isles. Use your globe to prove that these two groups of islands are the antipodes to each other.

Turn to page 4 and compare New Zealand and the British Isles in size and population. What can you say about the density of population in these two groups of islands?

As you read this chapter keep the following questions in mind:

1. Why have people from the British Isles chosen to settle in New Zealand, on the opposite side of the earth?
2. Why are the islands of New Zealand so much less densely populated than the British Isles?
3. How do the British people in New Zealand and the British people in the homeland help to supply each other's needs?

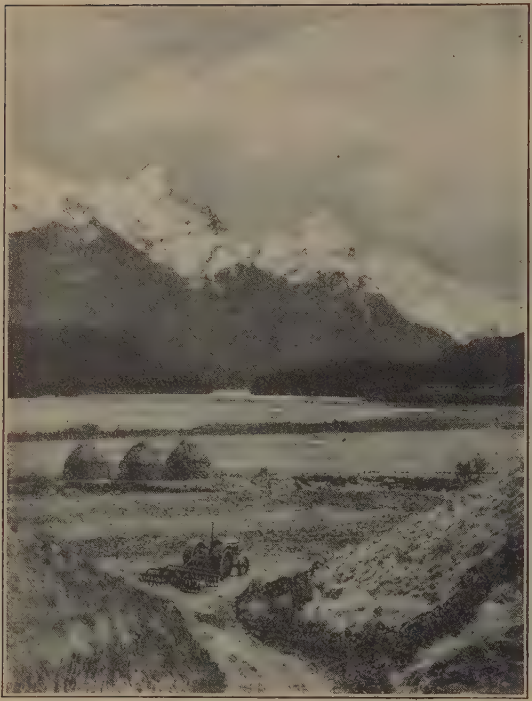


Figure 116. A valley among the snow-capped mountains of South Island, New Zealand. Of what mountains in Europe do these mountains of New Zealand remind you?

1. A Favorable Land for Settlement

The map on pages 334–335 shows that Captain Cook visited New Zealand as well as Australia. It was not until 1840, however, that the British made their first settlement in New Zealand. Do you know why the settlers were pleased with their new home, and what people they found living there?

Wellington — the first settlement. For their first settlement the British chose a place with an excellent harbor on Cook Strait, which separates the North Island of New Zealand from the South Island. This settlement was named Wellington, and today it is the second largest city of New Zealand and the capital of the dominion. It is also an important seaport. Find Wellington on the map on page 105 (*H 6*) and study Figure 115.

Other cities. Auckland, farther north on North Island, is a larger city than Wellington, chiefly because it is the nearest port of call for ships from Sydney and from ports on the western coast of Canada and the United States. About two thirds of all the trade of New Zealand is carried on through Wellington and Auckland.

The largest city on South Island is Christchurch, on the east coast. Much of the trade of South Island is carried on through Lyttelton, the port of Christchurch. Find these two cities on the map on page 105 (*H 6*), and notice the railroads which connect them with other parts of the island.

The native people. Although we shall see mostly people of British descent as we travel through New Zealand, we shall also see many Maoris, as the natives are called. They are tall and strong, with light-brown skin and wavy black hair, and they are far more intelligent than the blackfellows of Australia. They make up about one twentieth of the population of New Zealand, and they carry on farming and stock-raising much as the white people do.

A mountainous country. You will see from the map that both islands of New Zealand are made up largely of young, rugged mountains. There are, however, lowland plains bordering the coast in several places, and among the mountains there are many small but fertile plains. *See Figure 116.*

The mountains of South Island are so rugged and so beautiful that they have been named the Southern Alps. They are not so high as the Swiss Alps, but their summits are snow-capped, and from the snow fields great glaciers extend far down the slopes. Swift-flowing streams with many waterfalls also add to the beauty of the mountains.

The highest peak is called Mount Cook in honor of Captain Cook, and the largest glacier is named Tasman Glacier for the Dutch explorer who first sighted the islands. This glacier is about two miles wide and over eighteen miles long, and is thought to be the largest mountain glacier in the world.

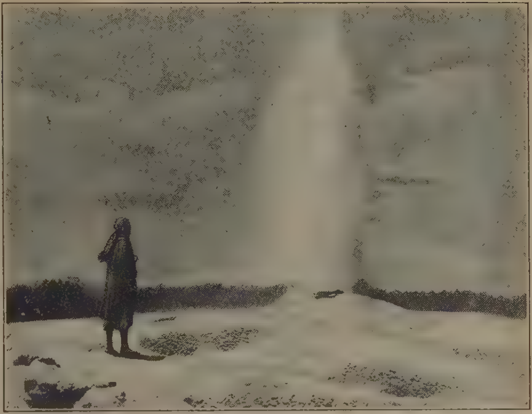
The mountains in North Island are lower than the Southern Alps, and among them are a number of volcanic peaks. Some of the volcanoes are dead, while others are still alive. Around the margins of the volcanic mountains are geysers and hot springs like those in Yellowstone National Park. *See Figure 117.*

A favorable climate. Do you remember why the British Isles have a mild climate with no great extremes of heat or cold? New Zealand has a mild climate for the same reason. On the lowlands and the lower slopes of the mountains the winters are never very cold, and uncomfortably hot weather in summer is unusual. If you cannot give the explanation for the mild climate, review what you learned on page 20.

Like Tasmania, New Zealand is far enough south to receive the moist westerly winds at all seasons, and so there is rain throughout the year. On which side of the islands should you expect the rainfall to be heavier? Why? Check your answer by Figure 91 (p. 97).

Figure 91 shows that the heaviest rainfall of all is on the western side of South Island, where the winds are forced to rise to cross the highest mountains of the country. This part of New Zealand has over 80 inches of rain a year. The eastern side of the island is not so well watered. The rainfall there is from 20 to 30 inches, and some of the farmers find it necessary to irrigate their fields with water from streams which flow eastward from the mountains.

Forests and grasslands. Because so much of New Zealand has heavy rainfall, it has large stretches of forests, and the parts of the islands that are cool as well as moist have pine trees and other softwoods which provide valuable lumber for building purposes.



Herbert Photos, Inc.

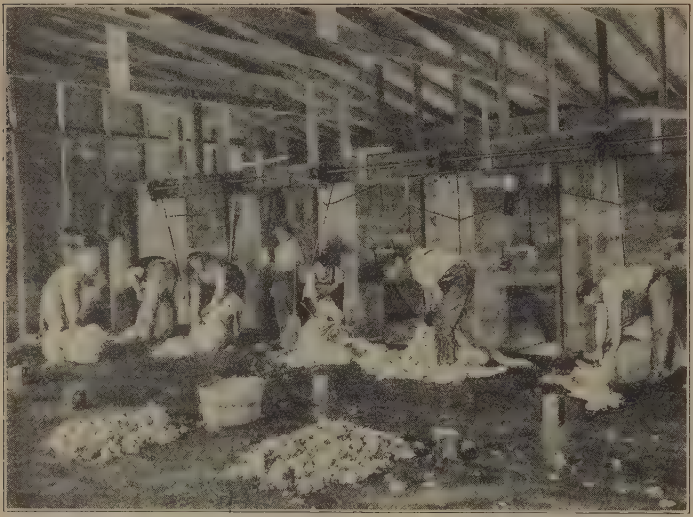
Figure 117. A geyser in North Island, New Zealand. This geyser spouts hot water and steam high into the air almost continuously, day and night.

The eastern side of South Island and the parts of North Island which have the least rain are chiefly grasslands. The native grass is coarse and wiry and makes poor pasturage; so the people have burned over the grasslands, plowed them, and planted good grass seed imported from England. Thus they have turned poor grasslands into rich pastures where large numbers of cattle and sheep can graze.

Finding likenesses. Sum up the likenesses between New Zealand and Great Britain by completing the following sentences:

1. New Zealand and Great Britain are both small island countries, separated from the nearest continents by water.
2. They are both in the temperate zone.
3. They both have a mild climate because --.
4. They both have abundant rainfall because ----------------------------------.
5. They are both healthful lands for white people because ----------------------------.

Finding differences. Now make as long a list as you can of ways in which New Zealand is different from Great Britain. Keep this list and add to it as you read more about the Dominion of New Zealand.



Photograph from Ewing Galloway, N.Y.

Figure 118. Shearing sheep in New Zealand. The men are using shears run by electricity to clip the thick wool from the sheep. The shearing is done in the spring, after the cold weather is over. Why?

2. THE NEW ZEALANDERS AND THEIR WORK

From what you have learned about New Zealand, what kind of work do you think is most important there? Study the exports shown on the map on page 105 and see whether or not you wish to change your answer.

The raising of live stock. So much of New Zealand is hilly and mountainous that it is better suited to grazing than to farming, and the raising of live stock is by far the most important kind of work. The climate is so mild that the grass grows at all seasons and the sheep and cattle can graze out of doors the year round.

Sheep and beef cattle. The ranchmen raise far more sheep than cattle, partly because sheep can graze on rougher land, and partly because sheep's wool grows thick and fine in the climate of New Zealand. As in Australia, the sheep are raised partly for meat, but chiefly for wool. *See Figure 118.*

The sheep thrive best where the rainfall is less than 50 inches, and so the sheep stations, or ranches, are mostly on the eastern side of the islands. Figure 119 is a picture of one of them.

The ranches where beef cattle are raised are mostly on the well-watered lowlands and lower hillsides, and there are far more in North Island than in South Island. What export products do the cattle ranches provide?

Dairying. In recent years the people of New Zealand have been giving more and more attention to dairy farming, and they now produce large quantities of butter and cheese for export. Many of the dairy farmers raise special fodder crops to make the cows give more and better milk. *See Figure 120.*

What "refrigerator ships" mean to New Zealand. In the days before there were "refrigerator ships" with compartments in which perishable products could be kept cold or frozen, it was impossible for the people of New Zealand, Australia, and other countries of the Southern Hemisphere to ship fresh meat, butter, or cheese across the warm tropical seas to the countries in the Northern Hemisphere. They could ship such products as wool and hides, but meat, butter, and cheese would spoil on the long, hot voyage.

Now that refrigerator ships have been built, the people of these southern lands are able to export a much greater variety of products. To the people of New Zealand, who depend so largely on the raising of live stock, this change has been especially helpful.

Farm crops. As you would expect, the people of New Zealand raise wheat and other grains, temperate-zone fruits, and vegetables to provide themselves with food. They do not, however, raise any crops of great importance for export. What handicap to farming in New Zealand explains this fact?

A Review of the British Empire

A summary. During your study of the British Empire you have learned that the outlying parts of the empire are valuable to the British people chiefly as (1) sources of raw materials and foodstuffs; (2) markets for manufactured goods; (3) places where people from the overcrowded homeland may go to make new homes and still live under the British flag. Give examples to prove that this is true.

You have discovered that most of the outlying parts of the empire carry on more trade with Great Britain than with any other country. That is partly because the home country and the possessions are able to supply many of each other's needs. Give examples to prove that this is true.

Another reason why there is so much trade between the home country and the possessions is that the British allow many of the products imported from the possessions to enter Great Britain "duty free." That means that shippers of such products do not have to pay *duties*, or money charges, for the privilege of selling their goods in Great Britain, as they are obliged to do in many other countries of the world. Certain other products imported from the possessions are charged duty, but the charge is less than is made on the same kinds of goods if they are imported from foreign countries. Thus the British offer the people of the possessions special advantages for marketing surplus products in the home country.

You have learned that Great Britain exercises so little control over the government of the dominions that they are almost like independent countries. What reason can you give for the fact that the people of the dominions are capable of governing themselves? Why are the people of many of the other possessions not so well able to govern themselves?

In some parts of the empire, especially India, the people want much more freedom in governing themselves than the British have as yet given them. The British believe that the people of these lands should be able to read and write and should learn more about doing work and business in modern ways before they are allowed to govern themselves. Do you think the people would be better off if they had self-government at present? Give reasons for your answer.

A check. Check your knowledge of the distant parts of the British Empire by naming each part described below:

1. The large British dominion located in North America. Can
2. A smaller dominion in North America. Lab
3. The British colony in Central America.
4. The British colony in South America.
5. The British dominion in Africa. Union S.
6. The largest of the British possessions bordering the Gulf of Guinea. Nigeria
7. The British possession bordering Egypt. Ang
8. Four British possessions in the plateaus of East Africa.
9. Two British colonies in Africa named for Cecil Rhodes. Northern – Southern Rhod
10. Two possessions which give the British control of the southern entrance to the Red Sea.
11. The lands in southwest Asia placed under British protection by the League of Nations. Pale
12. The large country in Asia which is part of the British Empire. India
13. The British part of the Malay Peninsula. Br
14. A continent which is a British dominion. A
15. The dominion made up of islands which are the antipodes to the British Isles. New Zea
16. British possessions in the East Indies.

Naming cities. Write down the names of the cities described below. When you have finished, you will have a list of the ten largest cities of the British Empire.

1. The capital of the British Empire. Lon
2. The largest city of India. Calcu
3. The leading seaport of western India.
4. The largest city of Australia.
5. The leading seaport of Scotland.
6. The capital of the Australian state of Victoria. Melbourne
7. The largest city of the Black Country in England. Birmingham
8. The great seaport on the western coast of England. Liverpool
9. The largest city of the Lancashire cotton-manufacturing district in England. Manche
10. The largest city of Canada. Montreal

Some things to prove. Give facts to prove that each statement below is true.

1. Certain parts of the British Empire are warm the year round, have abundant rainfall, and are very densely populated.
2. Other parts of the empire are very dry and very sparsely populated.
3. Certain parts of the empire are among the great farming lands of the world.
4. Certain parts are among the great grazing lands of the world.
5. Several parts of the empire are rich in mineral resources.
6. Several parts of the empire are not yet over-populated and are well suited to settlement by white people.
7. Certain parts of the empire will probably never attract large numbers of white people.

An English merchant's problem. Suppose you are a wholesale merchant in England, interested in shipping manufactured goods made in Great Britain to other parts of the British Empire. You have a supply of each kind of goods listed below, and wish to sell them in other parts of the empire. Tell where you would be most likely to find good markets for them, and why.

butter churns
automobiles
woolen goods
electric fans
cotton gins
airplanes
cotton goods
locomotives
umbrellas
gold-mining machinery
threshing machines
jute-manufacturing machinery
diamond-mining machinery
electrical wool clippers
well-drilling machinery
coal-mining machinery
flour-milling machinery
cotton-manufacturing machinery

A British buyer's problem. Imagine that you are a wholesale buyer in Great Britain and must secure from other parts of the British Empire supplies of the products listed below. To what parts of the empire should you send for them?

tea
tin
gold
copra
palm oil
fruit jams
fresh beef
wheat
asbestos
jute fiber
raw cotton
teakwood
fresh mutton
crude rubber
diamonds
oil-seeds
fresh fruit
raw wool
graphite
hides and skins
butter and cheese

Six empire problems. The British people face many problems in connection with their vast empire. Some of these problems are suggested below. Discuss them with your classmates.

1. In the dominions and in India manufacturing is increasing steadily. This means that in time the demands for goods manufactured in the home country will probably decrease. What effect will this have on the people of Great Britain?
2. Suppose that raw materials are used in increasing quantities in the outlying parts of the British Empire where they are produced. How is that likely to affect the surplus of raw materials for export to Great Britain? If in the future the British are not able to get such large quantities of raw materials from their possessions as they have in the past, to what foreign countries can they turn to purchase additional supplies?
3. As population increases in the outlying parts of the British Empire, the demands for food will increase there, and in time the surplus quantities of foodstuffs for export may be smaller. When that time comes, from what foreign countries will the British probably buy more foodstuffs than they do at present? Give reasons for your answer.
4. For many years manufacturing increased very fast in Great Britain. Many people believe that there will be little increase, and possibly even a decrease, in British manufacturing in the future. If this should prove to be true, would Great Britain be able to support a greater population than it does today? If population should increase and manufacturing decrease, what would some of the people have to do?
5. Already Great Britain is over-populated, and at times when business is poor large numbers of people are out of work. To what parts of the empire could those who want steady work in a healthful climate go?
6. Of all the distant parts of the empire, Australia is the one which is most eager to attract new settlers from the British Isles. Explain why. What opportunities for making a good living has Australia to offer to people from the homeland? What other dominions offer similar opportunities?

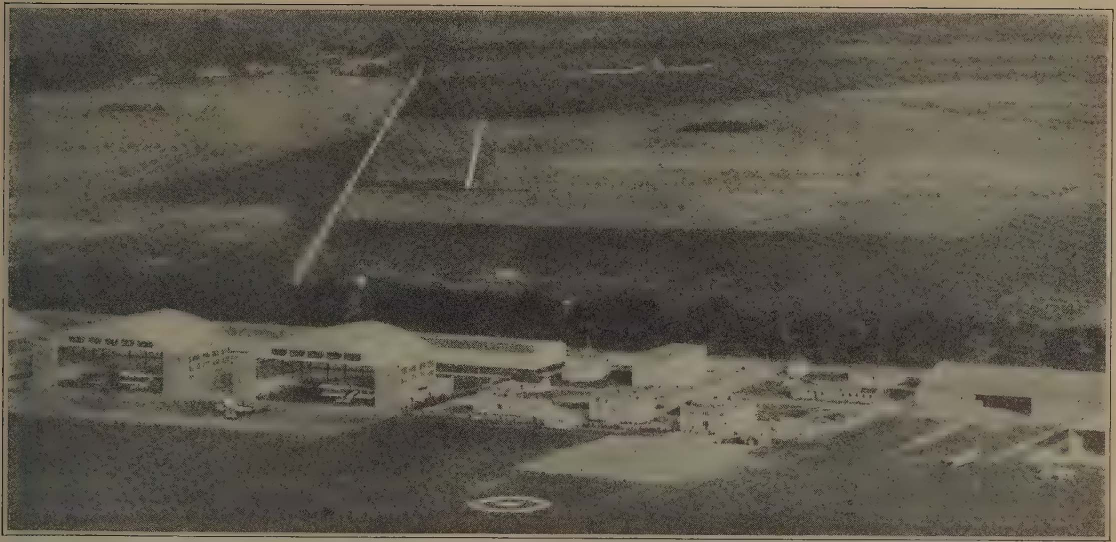


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Figure 122. The landing field at Le Bourget, the airport of Paris. At the left you can see two of the hangars where the airplanes are kept. Passengers arriving at this field by airplane find motor busses waiting to carry them to Paris, a trip which takes about three quarters of an hour. Find Le Bourget on Figure 128.

FRANCE AND ITS POSSESSIONS

I. THE REPUBLIC OF FRANCE

Trudy

Foreword. Across the English Channel from Great Britain lies the Republic of France. The French people are the nearest neighbors of the British, and ships and airplanes are continually traveling back and forth between the two countries.

From Dover on the English coast to Calais on the French coast the distance is less than 25 miles. Every day boats cross and recross the Channel between these two ports, carrying throngs of passengers and tons and tons of mail. The trip takes only an hour and a quarter, but the water is often rough, and therefore many people dislike the crossing. Trains from London and Paris connect with the boats, and one can make the trip between the two capital cities in about eight hours. Trace the route by train and boat from London (*E5*) to Paris (*F6*) on the map on pages 144–145.

If you wish to avoid the rough crossing of the Channel, and save as much time as possible, you can take an airplane from Croydon, just outside London, and land at Le Bourget, just outside Paris, in two and a half hours. *See Figure 122.*

Turn to the map on pages 144–145 again and find Calais (*F5*) and Marseille (*G7*). Fast trains make the trip between these two French ports, by way of Dijon (*F6*), in less than twenty hours. Prove by the map that the shortest route from the North Sea to the Mediterranean is this one across France, and that it is almost wholly a lowland route. Because of these facts, this route is one of the most important highways of travel and transportation in Europe.

The map shows that France is a six-sided country, and that three sides border the water. The Channel coast and the Atlantic

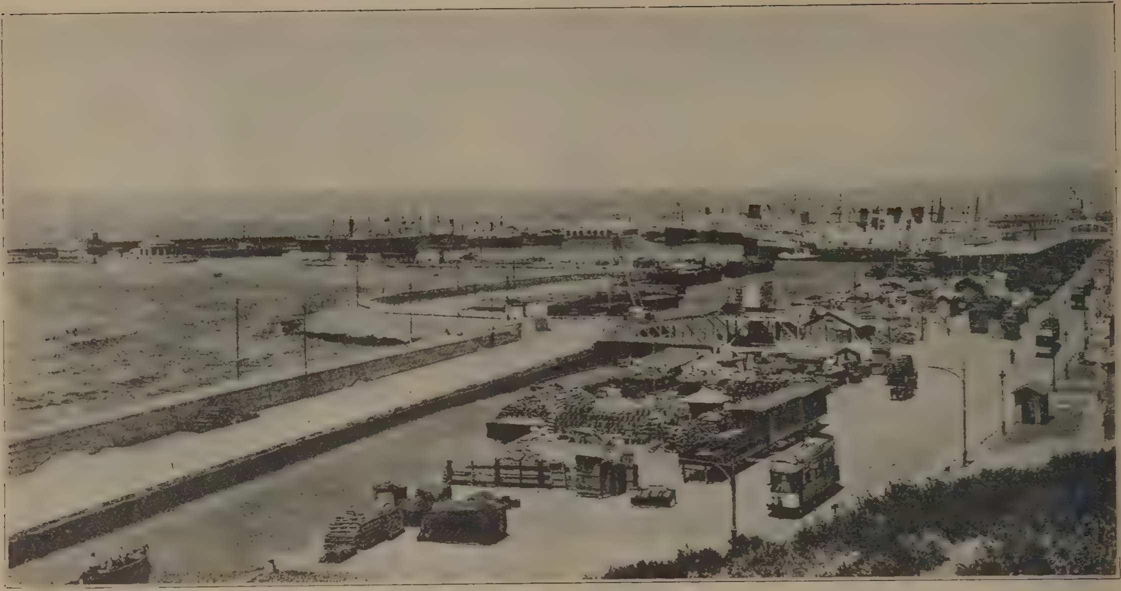


Figure 123. Part of the water front at Marseille. In the distance you can see some large ocean liners and some ocean freighters. Marseille was founded by Greek colonists about 2500 years ago, and it has always been a great center of shipping and commerce. Can you suggest any reasons for its growth as a seaport?

coast make it easy for the French people to carry on trade with the Americas, and the Mediterranean coast makes it easy for their ships to reach Africa, Asia, and Australia.

With these facts in mind you will not be surprised to learn that the French are one of the great commercial nations of the world and that their colonial empire, as their possessions are often called, is next largest to that of the British. Turn to the map on pages 148–149 and name the continent in which most of the French possessions are located. Can you give a reason why the French control so much of that continent?

As you read about France and its possessions, keep these questions in mind:

1. What likenesses and differences are there between the work of the people in France and the work of the people in Great Britain?

2. Are the French possessions more valuable than the British possessions or are they less valuable?

1. French Seaports and their Trade

On the map on pages 140–141 find the four leading seaports of France. Which is the northernmost port? On what body of water is it [illegible] located? At the mouth of what river is Havre? Seine Bordeaux? Garonne Near the mouth of what river is Marseille? Rhone

By studying the trade of these ports we can discover some of the likenesses and differences between France and Great Britain. Prove by the exports and imports that

1. The French, like the British, carry on much manufacturing.

2. France is not so well supplied with coal as Great Britain.

3. France, like Great Britain, has no great home supply of petroleum.

4. The French, like the British, import foodstuffs and raw materials from North America and South America.

5. The French, like the British, find in their colonies a valuable source of foodstuffs and raw materials, and a valuable market for manufactured goods.

Mar sa'y

Marseille — the Mediterranean gateway. Marseille is the second largest city of France and the greatest of the French seaports. Study its location more carefully and you will see that it is at the southern end of the Rhône-Saône Valley, some distance east of the Rhône delta. On the map (pp. 140–141) find the canal by which barges may reach Marseille from the Rhône River. Marseille has a good natural harbor, but not a very large one, and its foreign trade is so great that docks have been built westward along the Mediterranean coast for about three miles. *See Figure 123.*

In order to understand the growth of Marseille you need to look at the map on pages 144–145. Trace the Rhône-Saône Valley northward, and you will see that it forms a lowland corridor leading almost to the Paris Basin, the great plain in the midst of which Paris is located. Do you see how natural it is that railroads should follow this lowland corridor to the Mediterranean, and why a great seaport was bound to grow up as an ocean gateway at its southern end?

Because of its location Marseille is the port through which most of the French trade with northern Africa and Asia is carried on. Ships come to its busy wharves from the United States and from the countries of South America also. Among its imports are oilseeds of various kinds from all over the world, and one of its greatest manufacturing industries is the refining of vegetable oils and the making of soaps. Dun Kerk

avr

Havre and Dunkerque. Havre owes its growth to its location at the mouth of the Seine. This river and its valley form a natural highway of travel and transportation through the heart of the Paris Basin, and therefore Havre is the chief ocean gateway for this region. Dunkerque has grown up as the port for a great industrial district in the northern part of the plain. What reason does the map (pp. 140–141) suggest for the growth of manufacturing in that part of France?

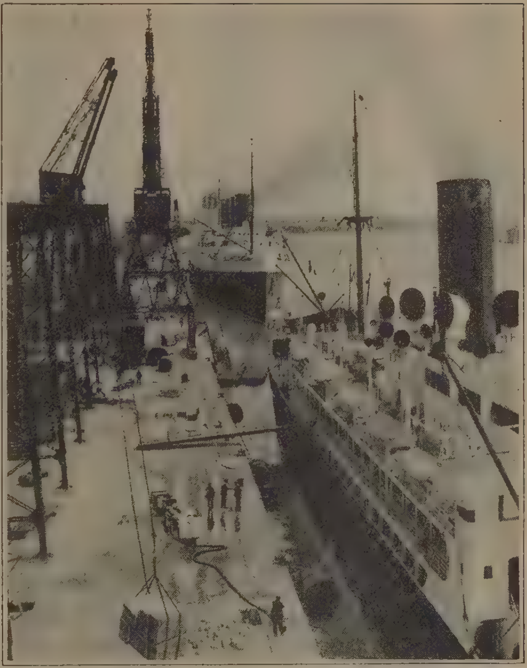

Photograph by Ewing Galloway, N. Y.

Figure 124. A glimpse of the water front at Havre, showing two French ships which have just arrived from the United States. Havre is an important port for passenger liners as well as for freighters.

As you would expect from their location, Havre and Dunkerque handle much of the French trade with Great Britain and the Americas. At their wharves ships from the Americas unload large quantities of raw materials such as cotton and wool, and take on cargoes of manufactured goods from French mills and factories. *See Figure 124.*

Bordeaux — gateway for the Aquitaine Basin. The plain in southern France which is drained by the Garonne River and its tributaries is called the Aquitaine Basin, and Bordeaux is its ocean gateway. The city is located at the mouth of the Garonne and is the great wine-exporting port of France. What do you find on the map to explain the importance of its exports of wine?

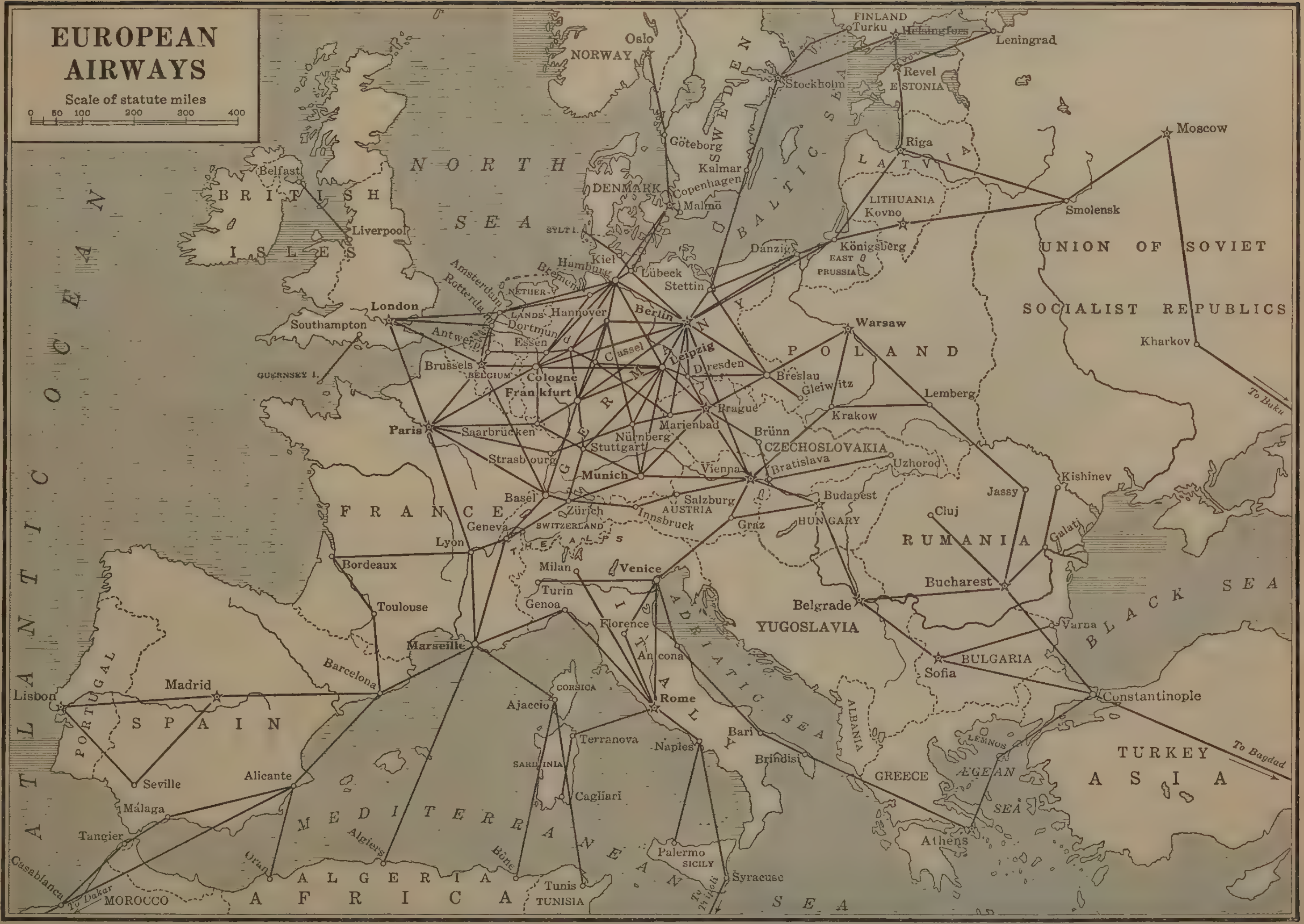
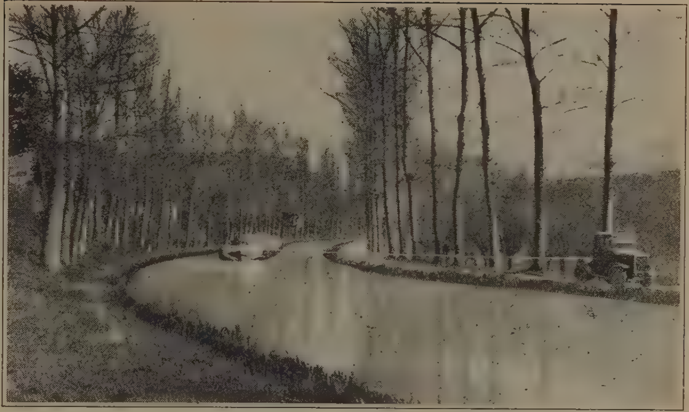

EUROPEAN AIRWAYS
Scale of statute miles
0 50 100 200 300 400
ATLANTIC OCEAN
NORTH SEA
BRITISH ISLES
Belfast
Liverpool
London
Southampton
GUERNSEY I.
NORWAY
Oslo
SWEDEN
Göteborg
Kalmar
Stockholm
FINLAND
Turku
Helsingfors
Leningrad
Revel
ESTONIA
Riga
LATVIA
LITHUANIA
Kovno
BALTIC SEA
DENMARK
Copenhagen
Malmö
SYLT I.
Kiel
Hamburg
Lübeck
Stettin
Danzig
Königsberg
EAST PRUSSIA
Bremen
Amsterdam
Rotterdam
NETHERLANDS
Hannover
Dortmund
Essen
Antwerp
Brussels
BELGIUM
Cologne
Frankfurt
Cassel
Berlin
Leipzig
Dresden
GERMANY
Breslau
Gleiwitz
Prague
Marienbad
Nürnberg
Stuttgart
Saarbrücken
Strasbourg
Munich
Paris
FRANCE
Basel
Zürich
SWITZERLAND
Geneva
Lyon
THE ALPS
Bordeaux
Toulouse
Marseille
Barcelona
Madrid
Lisbon
PORTUGAL
SPAIN
Seville
Málaga
Alicante
Tangier
Casablanca
To Dakar
MOROCCO
Oran
Algiers
ALGERIA
AFRICA
Bône
Tunis
TUNISIA
MEDITERRANEAN SEA
CORSICA
Ajaccio
SARDINIA
Terranova
Cagliari
Milan
Turin
Genoa
Venice
Florence
Ancona
ITALY
Rome
Naples
Bari
Brindisi
Palermo
SICILY
Syracuse
To Tripoli
ADRIATIC SEA
Salzburg
AUSTRIA
Innsbruck
Vienna
Graz
Brünn
CZECHOSLOVAKIA
Bratislava
Uzhorod
Budapest
HUNGARY
YUGOSLAVIA
Belgrade
ALBANIA
GREECE
Athens
ÆGEAN SEA
LEMNOS
BULGARIA
Sofia
Varna
Constantinople
TURKEY
ASIA
To Bagdad
BLACK SEA
RUMANIA
Bucharest
Cluj
Jassy
Kishinev
Galatz
POLAND
Warsaw
Krakow
Lemberg
UNION OF SOVIET SOCIALIST REPUBLICS
Smolensk
Moscow
Kharkov
To Baku

Figure 125. European airways. The black lines show the routes over which passenger airplanes are operated regularly.



Photograph by Ewing Galloway, N.Y.

Figure 126. A view of one of the smaller canals in the Paris Basin. Formerly donkeys or oxen were used to tow the barges on the smaller canals, but much of the towing is now done by automobiles. On the larger canals and rivers the barges are towed by steam tugboats.

Bordeaux is a busy manufacturing city also. Among its leading industries are flour-milling, sugar-refining, coffee-roasting, and the making of chocolate. How are these industries connected with its trade with distant lands? Why do many of the French imports from tropical lands enter the country at Bordeaux rather than at Havre?

Ports of lesser importance. As you read about each of these ports locate it on the map on pages 140–141. Although the larger ocean ships cannot go up the Seine beyond Havre, smaller freighters go upstream to Rouen (*G4*). Many of them bring cotton from the United States, and Rouen has become one of the great cotton-manufacturing cities of France.

Cherbourg (*F4*) will remind you of Southampton, for it is the port used by many of the great ocean liners which bring passengers to France from the United States and other countries on the western side of the Atlantic.

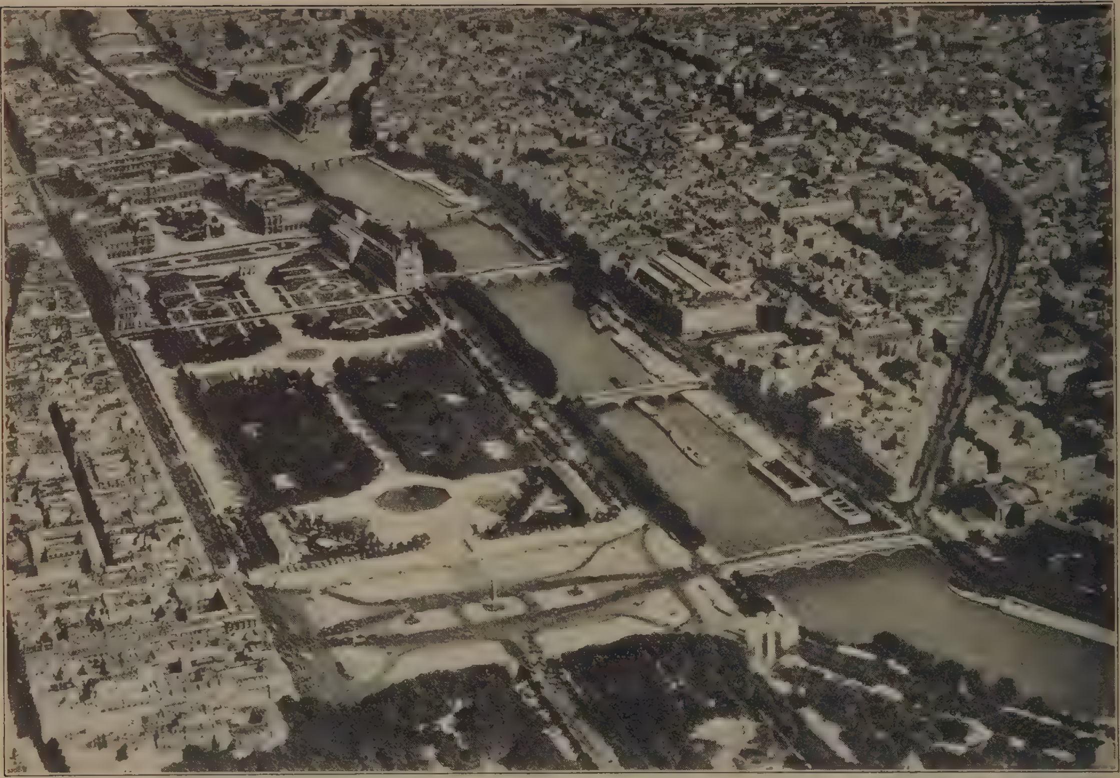
Farther south is the port of Nantes (*F5*), at the head of the estuary of the river Loire. Nantes shares with Bordeaux some of the French trade with tropical lands.

The railroads of France. Travelers entering France through any one of the seaports find good railroad service to almost any part of the country, and express-train service to Paris. The map on pages 144–145 shows that Paris is the great center of the railroads of France. All the main lines meet there, forming the spokes of a "railroad wheel" of which Paris is the hub.

The inland waterways. Turn to the map on pages 140–141 again and notice that many of the rivers of France are navigable. Notice also that there are many canals connecting the navigable rivers. The rivers and canals form a great system of waterways which are used for transporting freight in barges. We shall find that the people of France and other countries which share the Central Plains of Europe use rivers and canals for transporting freight much more than we do in the United States. Such transportation is slow, but it is cheaper than transportation by railroad. For this reason the barges carry chiefly bulky goods, such as coal, lumber, and iron ore, which have a low value in proportion to the space which they take up. *See Figure 126.*

Highways and airways. The French have also covered their country with a great network of highways for automobiles and motor trucks, and they have been one of the leading nations in developing regular airplane service for passengers and mail. All the larger cities have their landing fields, and from Paris there are routes over which passenger planes fly regularly to the leading cities of the neighboring countries. *See Figure 125.*

Tracing canals. Use the map on pages 140–141 to show how goods may be carried by barge from (1) the Garonne River to the Rhône; (2) the Rhône to the Rhine; (3) the Rhine to the Seine; (4) the Seine to the Loire; (5) the Seine to the Rhône.



Photograph by Ewing Galloway, N.Y.

Figure 127. An airplane view of part of Paris. In the distance you can see part of the little island (the Ile de la Cité) where the first settlement was made. The large open space with the tall column in the center is the Place de la Concorde, and beyond it are the Garden of the Tuileries and the buildings of the Louvre.

Naming ports. Prove your acquaintance with the French seaports by naming correctly each one described below.

1. The greatest seaport of France.
2. The port which is the chief ocean gateway for the Paris Basin. Havre
3. The port where many travelers from England enter France. Calais
4. The port which is the ocean gateway for the Aquitaine Basin. Bordeaux
5. The port which serves an important industrial district of northern France. [illegible]
6. A port for transatlantic passenger ships. [illegible]

Something to prove. Prove by the maps on pages 140–141 and 226–227 that the leading imports of France are chiefly raw materials and foodstuffs and that the leading exports are mostly manufactured goods.

2. PARIS AND THE PARIS BASIN

Paris, like London, attracts people from all over the world. Many come for business or study, and many for pleasure, for Paris is a city of work and of play. It is a city of great beauty also, for the French are very artistic, and they have spent much time, thought, and money in making their capital beautiful.

In Figure 127 you are looking up the river Seine toward the little island where the first settlement of Paris was made, over 1400 years ago. As the settlement grew into a town and then into a city, it spread first to the south bank of the river and then to the north bank. Figure 128 shows that today Paris spreads out for several miles in all directions from the Ile de la Cité (Isle of the City), where the first settlement was located. Study Figure 128 carefully.

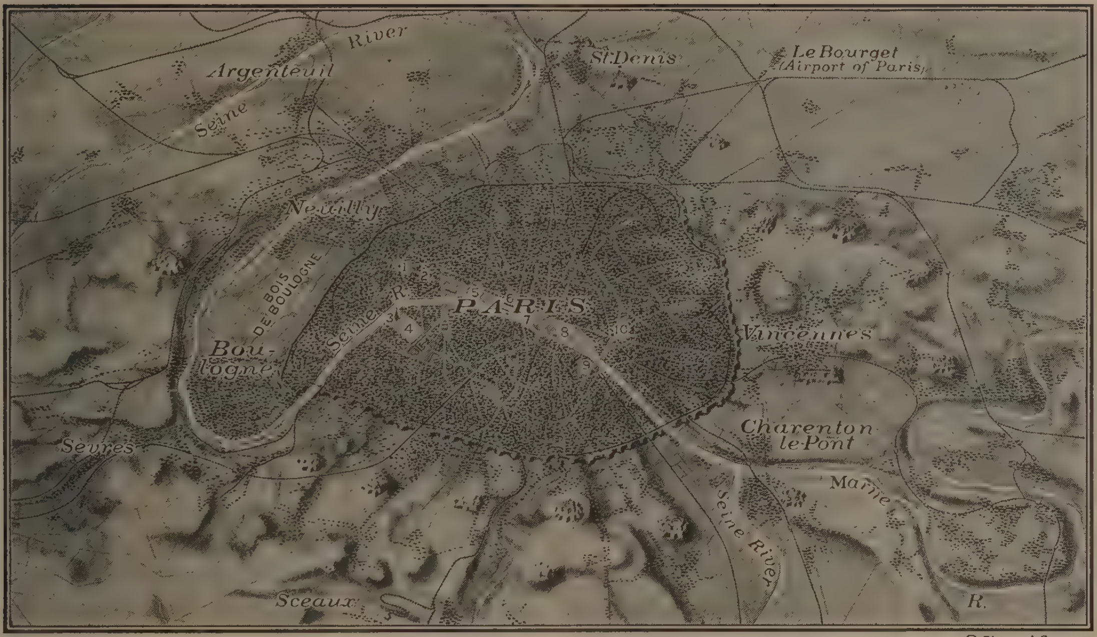


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Figure 128. A map of Paris and its surroundings. The numbers show the locations of the following places: 1, Arc de Triomphe; 2, Avenue des Champs-Élysées; 3, Eiffel Tower; 4, Champ-de-Mars; 5, Place de la Concorde; 6, Garden of the Tuileries; 7, the Louvre; 8, Cathedral of Notre Dame (on the Ile de la Cité); 9, Botanical Gardens; 10, Place de la Bastille. Find the beautiful park known as the Bois de Boulogne.

Besides being the capital of France, Paris is the fourth largest city in the world, for only New York, London, and Berlin have more people. Like London, it is a great business, industrial, and financial center, and a great center of learning and culture. Can you think of any reasons why Paris has become one of the world's greatest cities?

The heart of the Paris Basin. Find Paris on the map on pages 140–141 (*H4*). Notice that it is in the very heart of the Paris Basin, at the place that can be reached most easily by way of the Seine and its tributaries. The Paris Basin is one of the richest agricultural regions of France, and long ago, when there were no railroads and but few roads, Paris became its principal trading center. Can you explain why?

As time went on, Paris became a meeting place for roads from all parts of the basin, and then for railroads. Thus from the very first the location of Paris has made it a natural center of travel and transportation, and this, in turn, has made it a great center of business and trade.

A great river port. You will remember that in our own country cities like St. Louis, which were once great river ports, lost most of their trade by water when they became great railroad centers. Paris is different, for even after it became a railroad center it continued to grow as a river port.

East and west of the central part of the city the Seine is lined with long stone wharves, where hundreds of barges unload bulky goods for use in the city. Some of the barges come upstream from Havre and Rouen, and others come from distant parts of France by way of the canals that lead to the Seine and its tributaries.

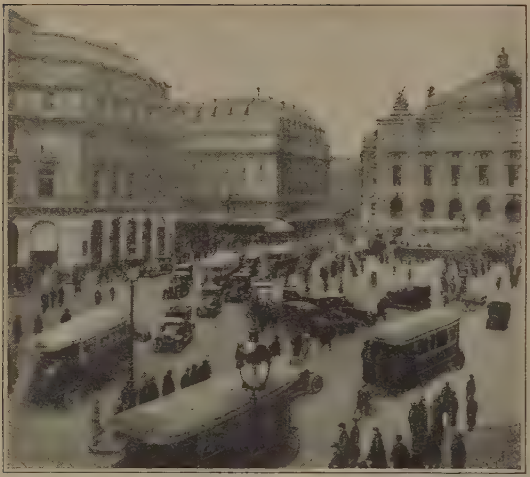

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Figure 129. The Place de l'Opéra, in Paris. From left to right the buildings are an American bank, a famous café, and the beautiful Opera House.

Each year the barges bring thousands of tons of coal to Paris. Some of it comes from the large coal field in the northern part of France, and some of it is imported coal from Great Britain. On the map on pages 140–141 trace the route of the coal barges from the northern coal field to Paris.

A great manufacturing city. Just as London is the greatest manufacturing city of Great Britain, so Paris is the greatest manufacturing city of France. What advantages has it for getting raw materials and distributing manufactured goods?

One of the greatest helps to manufacturing in Paris is the fact that coal can be brought in cheaply by water. The factories are along the banks of the river upstream and downstream from the center of the city, and they extend into the suburbs. Coal comes almost to their doors by barge, and the many railroads which center in Paris distribute their products to all parts of France, to neighboring countries, and to the French seaports for export.

Among the factories on the outskirts of the city are those which make automobiles, cutlery, and various kinds of tools and machinery. Here also are factories which make automobile tires and other rubber goods, chemicals, and glass. Near the center of the city are factories for the manufacture of luxuries such as jewelry, expensive leather goods, and fine furniture. The Parisians have always been famous for their skill and artistic taste in making things of fine quality and great beauty.

Parisian goods in Parisian shops. The best way to learn how skillful and artistic the Parisian workers are is to visit the shops. In the windows you will see wonderful displays of clothing, laces, embroideries, jewelry, leather goods, toys, and other products of Parisian factories and workshops. So beautiful are these products that manufacturers in many other countries copy the patterns and designs.

The greatest industry. By far the most important industry in Paris is the making of women's clothing and hats. French dressmakers and milliners are so artistic that they set the fashions for the women of Europe and America. Buyers from the great stores in the United States and the various European countries visit Paris several times a year to learn the new styles and to purchase the latest gowns and hats to offer to their customers at home.

A busy, beautiful city. Like all great cities, Paris is full of life and activity. The sidewalks swarm with people, and the streets are crowded with automobiles. Electric trains speed through subways underground, and streams of people and automobiles cross and recross the bridges over the Seine. During the day thousands of people are busy in stores, banks, offices, factories, and workshops, and at night thousands seek pleasure and entertainment in the theaters and the gay cafés. *See Figure 129.*

What impresses the visitor most is the

beauty of this great city, — its broad boulevards lined with trees, its public squares with their fountains and monuments, its parks and gardens, and its palaces and churches.

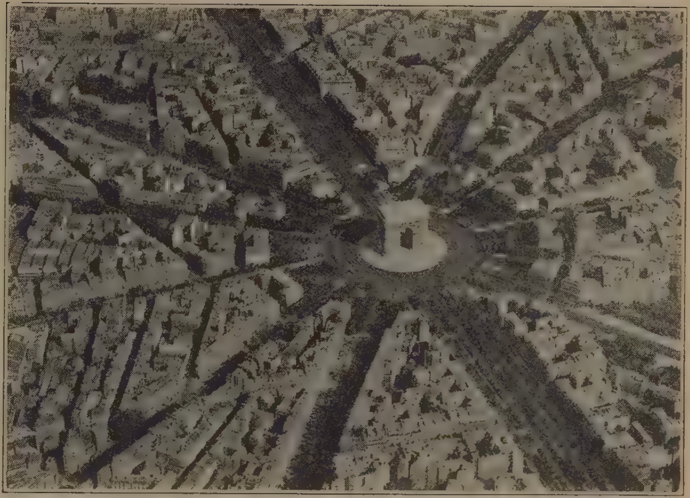

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Figure 130. An airplane view of the Place de l'Étoile, in the middle of which stands the Arc de Triomphe. The French word *étoile* means "star." Do you think this *place* is well named?

Sight-seeing in Paris. On the right, or north, bank of the Seine are the better hotels and theaters of Paris, the principal business and shopping districts, and the more fashionable homes. There too are some of the museums and art galleries for which Paris is famous. Among them is the Louvre, which contains many of the world's finest paintings and works of sculpture. (See 7 on Figure 128).

From the Louvre you can walk westward through the beautiful Garden of the Tuileries to the large open square called the Place de la Concorde, where there are eight statues, each representing a French city. From there a broad boulevard lined with trees (the Avenue des Champs Élysées) leads to a great open circle in the midst of which stands the Arc de Triomphe (Arch of Triumph). Beneath this arch is the tomb of the "Unknown Soldier" who lost his life in the World War of 1914–1918. Trace the route of this walk on Figure 128 and study Figure 130.

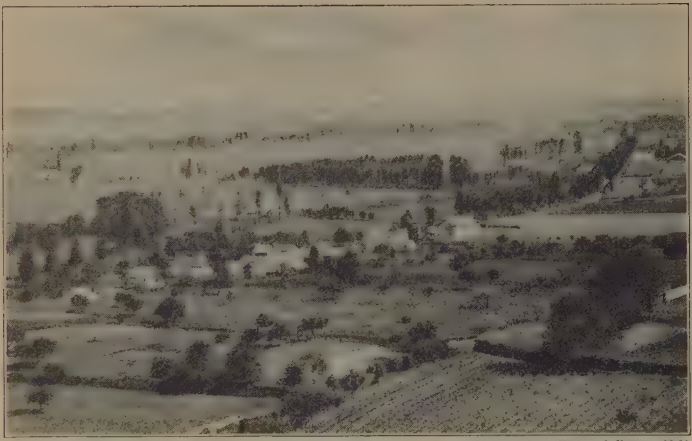
You will surely wish to visit the Ile de la Cité to see the beautiful Cathedral of Notre Dame, which is more than six hundred and fifty years old. On the island you will also see the group of buildings known as the Palace of Justice, where the highest law courts of France are held.

Crossing from the island to the left, or south, bank of the Seine, you will find yourself in a crowded section of Paris known as the Latin Quarter. In this section live thousands of students from all parts of France and many students from other countries, for the University of Paris, the College of France, the School of Fine Arts, and various other schools and colleges are located here. This section also has several fine museums.

If you walk westward from the Latin Quarter, you will see many of the French government buildings. Among them is the group of buildings where the Senate and the Chamber of Deputies meet. France is a republic, with a president, who is elected for a term of seven years. The Senate and Chamber of Deputies are made up of representatives from all parts of the country, like our Congress and the British Parliament.

You could spend weeks and weeks in Paris without seeing all there is of interest and beauty there. But even a short visit will show you that the French, like the British, have a capital which is a great world city.

Making a summary. Make a summary of the reasons for the growth of Paris, explaining why (1) it long ago became a market center and a river port; (2) it later became a railroad and manufacturing center; and (3) it now attracts people from all parts of the world.



Photograph by Ewing Galloway, N.Y.

Figure 131. A farming village in the Paris Basin. The basin is dotted with little villages like this, and with many larger towns and cities. Notice that the houses are clustered along the main street, and that the farm lands stretch away in all directions.

Farming in the Paris Basin. Travel in any direction you choose from Paris, and you will see people at work in the fields, for the Paris Basin is a great farming region. The westerly winds from the Atlantic Ocean bring ample rain at all seasons and keep the winter weather from being very cold. Thus, in addition to crops sown in the spring, the farmers can raise autumn-sown crops of grain.

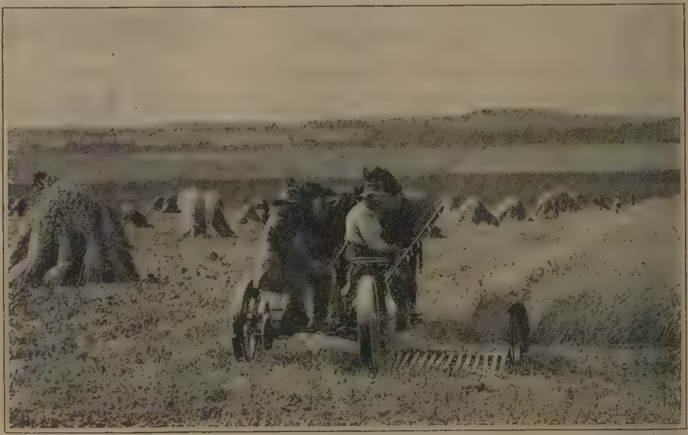
Clustered around Paris are many market gardens, and a little farther away are dairy farms. Can you explain why? Elsewhere in the basin most of the farmers carry on mixed farming, though the special money crops differ in different sections. *See Figure 131.*

On many of the farms winter wheat is the principal money crop, for the Paris Basin is one of the chief wheat-growing regions of Europe. More wheat is grown in France than in any other European country except European Russia; but even so the French have to import additional supplies of wheat in order to meet their needs. *See Figure 132.*

In the northern part of the plain, sugar beets are the leading money crop, and there are many factories where the sugar is prepared for use. Farther south there are several districts where the farmers raise large quantities of grapes for making wine. In all parts of the region the farmers raise oats and other grains besides wheat, and keep cows, sheep, pigs, and poultry.

Two industrial districts. On the borders of the Paris Basin are two very important industrial districts. One is the iron-mining region of Lorraine in the east, and the other is the coal-mining region in the north. Find these industrial districts on the map on pages 140–141 (*J-K4*) and (*H3*).

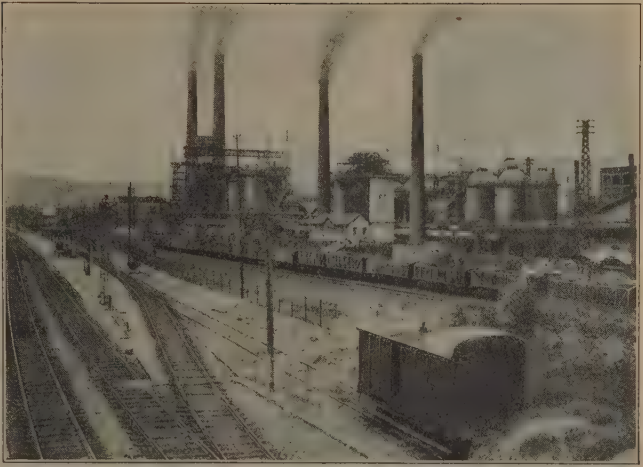
Iron and steel in Lorraine. The iron mines of Lorraine are among the richest in the world, and they make France the second greatest country in the world in the production of iron ore. Our own country is first. Because so much iron ore is mined in Lorraine, this is the



Photograph by Burton Holmes from Ewing Galloway

Figure 132. Harvesting wheat in the Paris Basin. What reasons can you give for the fact that the Paris Basin is a great farming region? for the fact that winter wheat is a leading crop there?

leading iron-and-steel manufacturing district of France. The largest city of the district is Nancy. There, and in various other cities and towns in Lorraine, you will see huge blast furnaces and steel mills that will remind you of the Pittsburgh district of our own country. *See Figure 133.*



Photograph by Ewing Galloway, N. Y.

Figure 133. An iron-and-steel plant near Nancy, in Lorraine. Huge quantities of iron ore are smelted in Lorraine, and the pig iron is used to make all kinds of iron and steel.

The Saar Basin and its coal. On the map on pages 140–141 find the Saar Basin (*K4*) and notice its location with reference to Lorraine. This little area between France and Germany has valuable coal mines which belong to the French people. The area itself, however, does not belong to France, but is governed by a commission of the League of Nations.

Because of its coal the Saar Basin is a busy industrial district, and among its manufactures glass and porcelain products are especially important. Because of its location you might well expect this basin to supply the fuel for the blast furnaces in Lorraine. Unfortunately, however, the coal from the Saar mines makes poor coke, and the fuel for smelting iron ore in Lorraine comes largely from a coal field farther north in western Germany.

The northern coal field and its industries. By far the most valuable coal field of France is the one in the north, and a great industrial district has grown up there. In Lille and many other cities and towns of the district you will see woolen mills, cotton mills, and linen mills, for this region is the leading textile-manufacturing district of France. Part of the flax for the linen mills comes from the neighboring farm lands, and large quantities of wool and cotton are imported through the port of Dunkerque.

Because the coal of this northern field is good for coking, the district has also become an important center for the smelting of iron ore, the making of steel, and the manufacture of iron and steel products. Most of the iron ore used in this section comes from Lorraine.

France has so much iron ore that there is a surplus for export. The exports of iron ore go chiefly to Germany; for while the Germans have abundant coal in their country, they have less iron ore than they need. France, on the other hand, with abundant iron ore, has less coal than it needs, and therefore the French people are obliged to import additional supplies of coal, chiefly from Germany and Great Britain.

Giving reasons. Complete each sentence below by giving reasons.

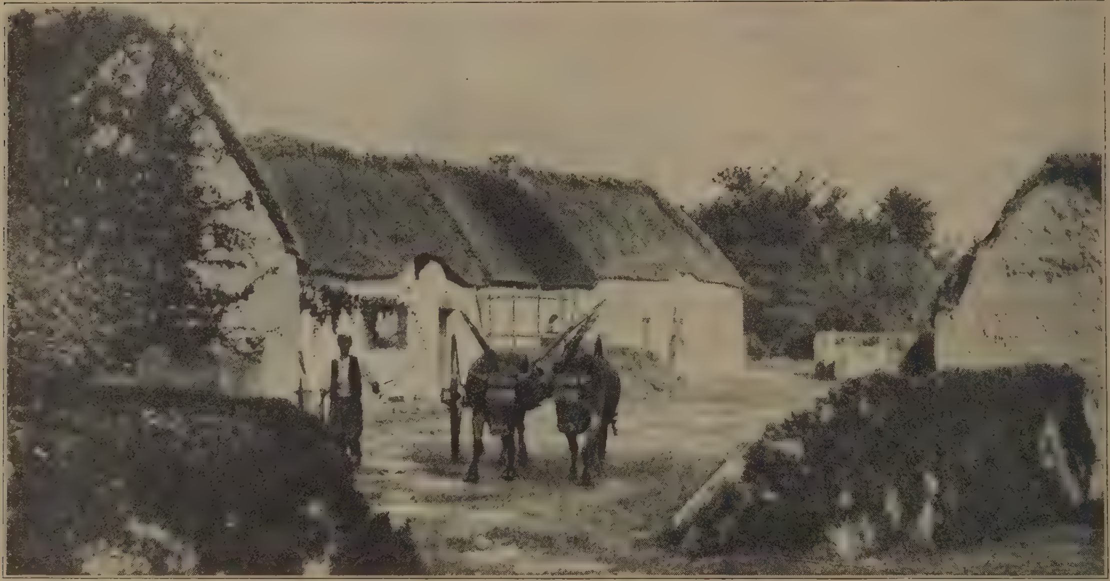
1. The Paris Basin is a great agricultural region because ____________________________.

2. Lorraine is a great center for the manufacture of iron and steel because ___________ ____________________________________.

3. There is a very important industrial district on the northern border of the Paris Basin because ______________________________.

4. Dunkerque imports large quantities of raw cotton and wool because _________________.

5. The French import coal from Great Britain and Germany because _________________.



Photograph by Ewing Galloway, N. Y.

Figure 134. A farmyard in Brittany. The farmhouse and other buildings are of stone covered with plaster, and the roofs are thatched with straw. The peasants of Brittany have little farming machinery, and they do most of their work with the help of oxen. Why is Brittany a poorer farming region than the Paris Basin?

3. THE UPLAND OF BRITTANY AND THE AQUITAINE BASIN

On the map on pages 140–141 find the Upland of Brittany to the west of the Paris Basin. Find also the Aquitaine Basin, which is drained by the Garonne River and its tributaries. Judging from the products shown on the map, which do you think is the more important farming region? What reason can you give for that fact?

A hilly region. In many ways the Upland of Brittany is like the Coastal Hilly Belt of New England. Many of the hills are rocky, and much of the soil is too thin to be good for crops. Grass, however, grows abundantly because of the moist climate. Thus Brittany, like New England, is better suited to the raising of live stock than to the raising of crops, and it has become an important dairying region. Other reminders of New England are the apple orchards which cover many of the hillsides in the northeastern part of the region. *See Figure 134.*

The climate of Brittany is much milder than that of New England because of the westerly winds from the Atlantic Ocean. The grass in the pastures remains green most of the year, and in certain sheltered spots along the coast spring comes so early that the farmers specialize in raising early vegetables for the Paris market.

Mineral wealth. On the map find the two places in this upland region where iron ore is mined. Unfortunately there is no coal in the region, and so the smelting plants which have been built at Caen and Nantes use imported coal from Great Britain and Germany. The smelting plants use only a small part of the ore that is mined. Part of the surplus is exported, often in the ships which bring the coal, and the rest goes to the northern coal field of France.

A summer playground. The rocky, irregular coast of Brittany, with its many bays and inlets, is dotted with resorts where large num-

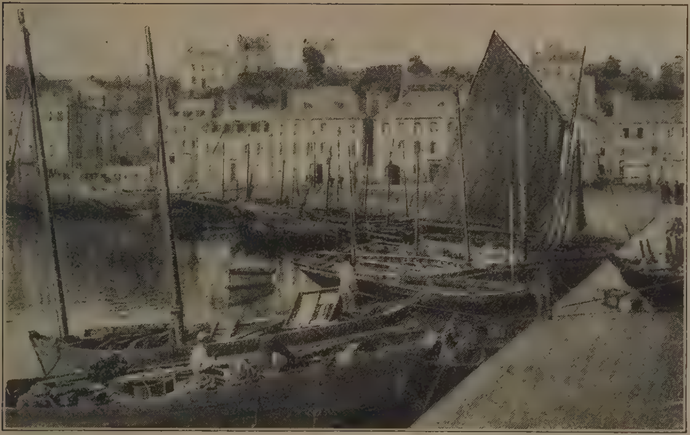


Figure 135. The harbor of a fishing village in Brittany, showing the kind of boats in which the fishermen go out to catch sardines along the coast. Many of the fishing boats have red sails.

bers of French and British people spend their summer vacations. How do the summer visitors help to provide work for the people?

Breton fishermen. Each bay and river mouth along the coast of Brittany has its little port, and each port has its fleet of fishing boats. The Bretons have been famous fishermen for hundreds of years. Some of them go to Newfoundland and Iceland for cod, and others go to the North Sea for herring. Many work in smaller boats along the coast of Brittany, fishing for sardines. On shore many of the Breton women find work in the factories where the sardines are canned in oil for export. *See Figure 135.*

Farming in the Aquitaine Basin. The Aquitaine Basin is entirely different from the Upland of Brittany; for the land is level or gently rolling, and most of the soils are deep and fertile. Like the Paris Basin, it is a great farming region; but since its climate is warmer, the farmers raise corn as well as wheat. You may think of this basin as the "corn belt" of France, for nearly all the corn of the country is grown there.

Nearly a third of all the vineyards of France are in this warm, sunny plain of the south, and huge quantities of grapes are grown for making wine. French wines take their names from the districts where they are made, and because of their excellent quality some of them find markets in many other countries. *See Figure 136.*

Turning waste lands into woodlands. On the map on pages 140–141 find the strip of coast land known as the Landes (*F6–7*). For many years this section was a waste of sand dunes which were not only useless but harmful; for the winds from the ocean caused them to move slowly inland, and little by little they were spoiling the bordering farm lands. To stop the eastward march of the dunes the people planted pine trees, and today these one-time waste lands of the Landes provide large quantities of lumber and turpentine. *See Figure 137.*

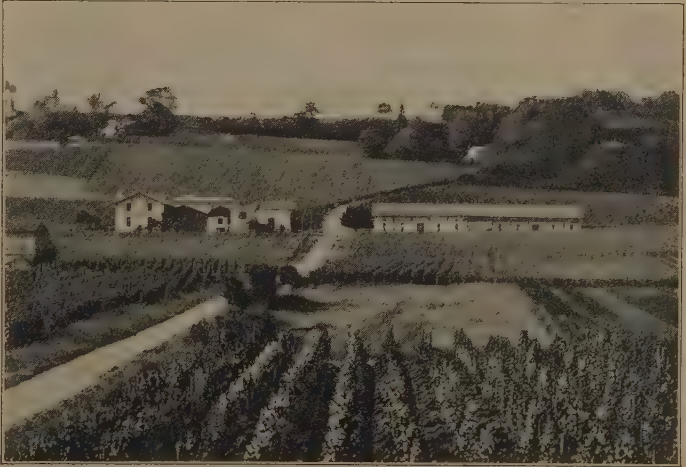
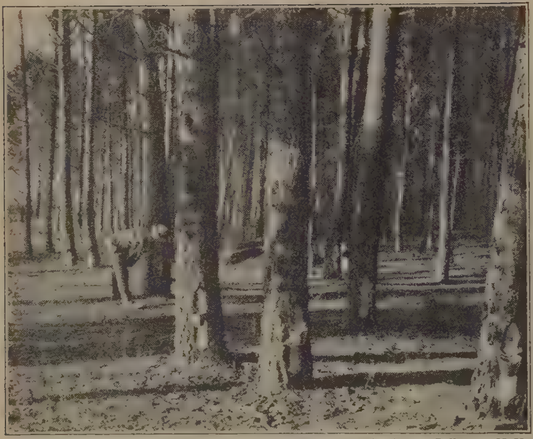


Figure 136. Vineyards in the Aquitaine Basin. The long, low building is a "winery," where wine is made from the grapes. From what seaport are the wines of the Aquitaine Basin exported?



Photograph by Ewing Galloway, N. Y.

Figure 137. A "turpentine forest" in southern France. Notice the cups which catch the resin as it drips from the gashes in the pine trees. Where in the United States could you see sights like this?

This turning of waste lands into woodlands means much to the French people, for so much of their country has been cleared of trees to make room for farms that they are not well supplied with forests. This lack of large forests is something you will notice all through the densely settled regions of western Europe, for most of the level land and much of the hilly land have been cleared for farming. Wood, therefore, is scarce and expensive. For this reason the people are caring for the forests which are left in such a way that they may produce yearly "crops" of timber. This, you will remember, is what our government is doing in the national forests of our country.

Some things to explain. 1. Give three reasons why so many of the people along the coast of Brittany get their living by fishing. Remember what led to the growth of fishing along the New England coast.

2. Many of the officers and sailors on French ships are Bretons. Explain why.

3. Explain why the Aquitaine Basin is the corn-growing region of France.

4. Explain why Bordeaux exports large quantities of wine.

4. THE CENTRAL PLATEAU AND THE RHÔNE-SAÔNE VALLEY

Son

On the map on pages 140–141 find the Central Plateau of France and the Rhône-Saône Valley. What do you find in the plateau which suggests that there may be industrial centers there? What have you already learned about the Rhône-Saône "corridor"?

The Central Plateau. Much of this large region is not well suited to farming because the land is hilly and mountainous and much of the soil is poor. In places, however, there are rich lava soils on which the people raise grain and other crops.

As a whole the Central Plateau is better suited to grazing than to farming, and many of the people make their living by keeping live stock. Dairying is important in the northeastern part of the region because there are good markets for dairy products in the cities of the Rhône-Saône Valley. Many of the people of the plateau raise beef cattle, and others raise sheep and goats. Have you ever eaten Roquefort cheese from France? It is made from a mixture of sheep's milk and goat's milk, and takes its name from the town in the southern part of the plateau where it is made.

Coal and manufacturing. The map shows that there are several places in the plateau where coal is mined. These are very small coal fields compared with the one in northern France, but near each one an industrial center has grown up. The chief work in these centers is the making of all kinds of products of iron and steel, from bolts and nails to locomotives and heavy machinery. The iron and steel used in the factories come mostly from Lorraine. St. Étienne is the largest of the iron-and-steel manufacturing cities.

Farther west in the plateau are Clermont-Ferrand, which specializes in the manufacture of automobile tires, and Limoges, famous for the beautiful china which is made there.

Figure 138. A silk mill in the Rhône Valley near Lyon. The prosperity of many of the villages and small towns in the Rhône Valley depends on the silk mills, which give employment to many people.

A great silk-manufacturing district. On the map on pages 140–141 find Lyon (*J6*). Notice that it is located where the Rhône River, coming from the Alps, joins the Saône. Lyon is the third largest city of France and the center of the greatest silk-manufacturing district of Europe.

Silk, as you probably know, is the silvery fiber spun by the silkworm in making its cocoon. The raising of silkworms depends on the growing of mulberry trees, for the worms live by eating mulberry leaves. Mulberry trees, in turn, need a fairly warm climate, and the Mediterranean borders of Europe are well suited to their growth.

Long ago silk production became an important kind of work in the Rhône Valley of France and in the bordering part of the plateau, and the towns of that region became silk-manufacturing centers. Years ago the industry outgrew the home supplies of raw material, and large quantities of raw silk are now imported from Italy, China, and Japan.

Some of the towns specialize in spinning silk thread, and others in weaving silk cloth. St. Étienne is a center for the making of ribbons. Lyon specializes in dyeing and finishing silk goods, and is the business center of the entire silk industry. *See Figure 138.*

Vineyards and olive groves. If you travel southward through the Rhône-Saône Valley, you will see many vineyards and many groves of olive trees. The Mediterranean borderlands of Europe have winter rains and summer drought, and therefore they are not well suited to the raising of crops which need rain in summer. But grapevines and olive trees grow well in the Mediterranean climate, for they have long roots, which draw up water from far beneath the ground when the surface is dry and dusty. For this reason grapes and olives are two of the most important Mediterranean products.

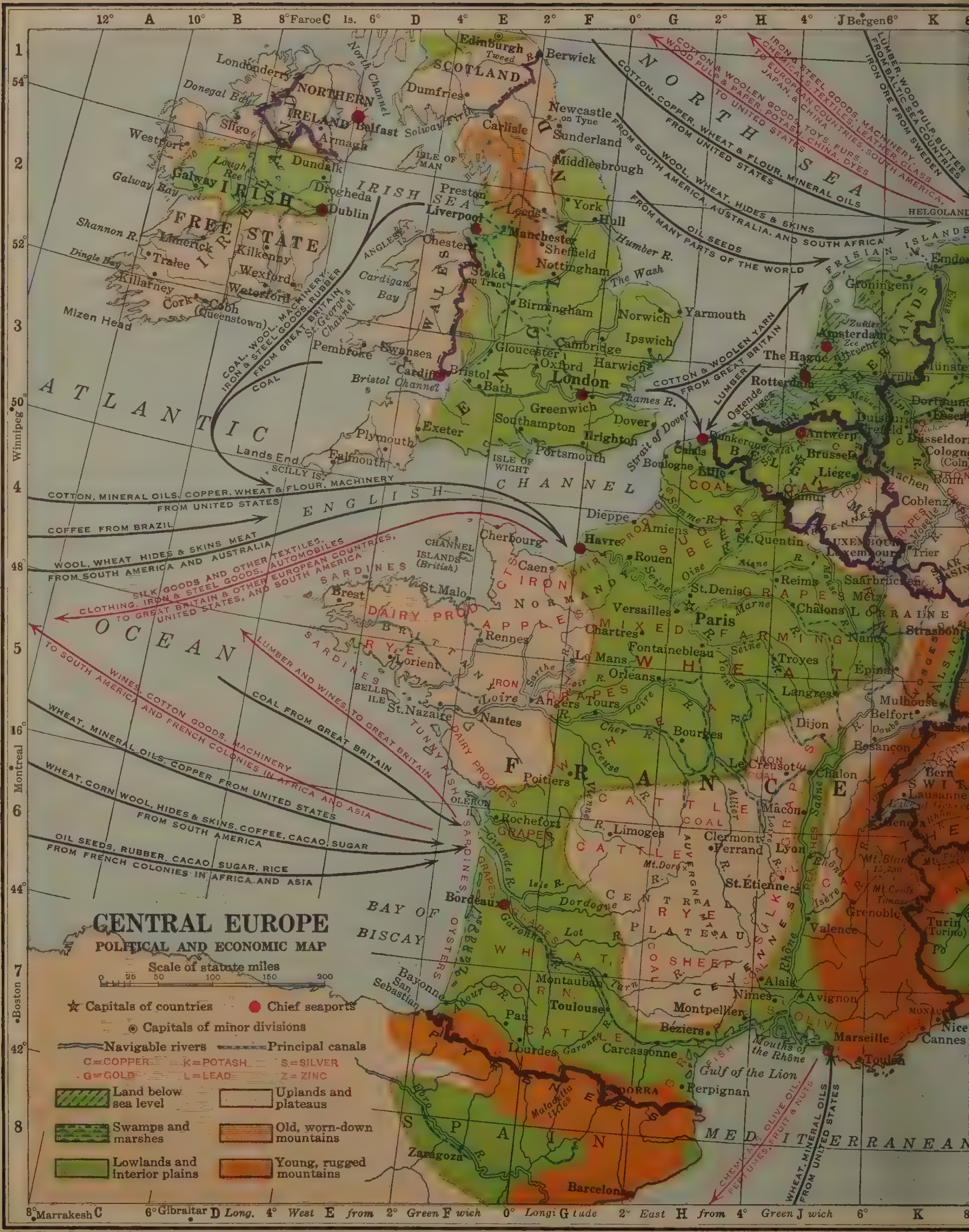
Because of the abundance of grapes and olives in the Mediterranean region of France, the making of wine and olive oil is of great importance. No doubt you have eaten salad dressing made of olive oil, and perhaps you know that olive oil is also used for making soap. Marseille is the great center for the making of olive oil in France, and it was this industry that gave the city its start in the manufacture of soaps. Today, as you know, its vegetable-oil refineries and soap works use oilseeds of various kinds from many different parts of the world.

Sentences to complete. 1. The Rhône-Saône Valley is a great highway of travel and transportation because ________________________.

2. Several cities in the eastern part of the Central Plateau manufacture products of iron and steel because ________________________.

3. Marseille imports raw silk and exports silk goods because ____________________________.

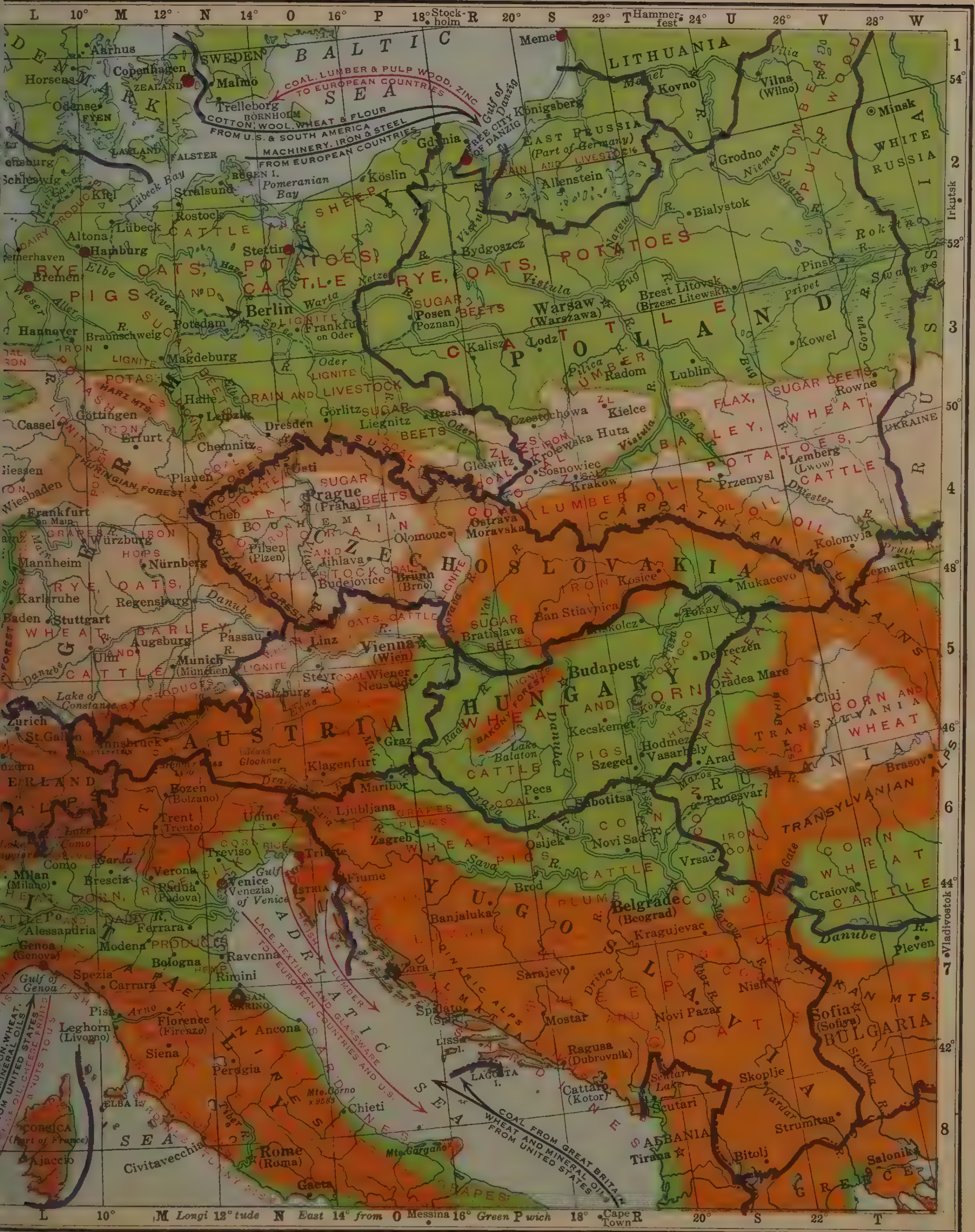
4. Large quantities of grapes and olives are grown in the Mediterranean region of France because ________________________________.


12° A 10° B 8° Faroe C Is. 6° D 4° E 2° F 0° G 2° H 4° J Bergen 6° K
1
2
3
4
5
6
7
8
54°
52°
50°
48°
46°
44°
42°
Winnipeg
Montreal
Boston
NORTHERN IRELAND
Londonderry
Donegal Bay
Sligo
Westport
Belfast
Armagh
Dundalk
Drogheda
Dublin
Lough Ree
Galway
Galway Bay
IRISH FREE STATE
IRELAND
Shannon R.
Limerick
Kilkenny
Dingle Bay
Tralee
Killarney
Wexford
Waterford
Cork
Cobh (Queenstown)
Mizen Head
North Channel
SCOTLAND
Edinburgh
Tweed R.
Berwick
Dumfries
Solway Firth
Carlisle
Newcastle on Tyne
Sunderland
Middlesbrough
ISLE OF MAN
IRISH SEA
Preston
Liverpool
Leeds
York
Hull
Manchester
Sheffield
Humber R.
Nottingham
The Wash
Chester
Stoke on Trent
ANGLESEY
Cardigan Bay
WALES
ENGLAND
Birmingham
Norwich
Yarmouth
Ipswich
Cambridge
Gloucester
Oxford
Harwich
Swansea
Pembroke
Cardiff
Bristol
Bristol Channel
Bath
London
Thames R.
Greenwich
Dover
Southampton
Brighton
Portsmouth
ISLE OF WIGHT
Exeter
Plymouth
Falmouth
Lands End
SCILLY IS.
St. George's Channel
Strait of Dover
ENGLISH CHANNEL
NORTH SEA
HELGOLAND
FRISIAN ISLANDS
Emden
Groningen
NETHERLANDS
Zuider Zee
Amsterdam
Utrecht
The Hague
Rotterdam
Arnhem
Münster
Dortmund
Essen
Duisburg
Krefeld
Düsseldorf
Cologne (Cöln)
Bonn
Aachen
Coblenz
Trier
Meuse R.
Rhine R.
Ostende
Bruges
Ghent
Antwerp
Brussels
Liège
Namur
BELGIUM
ARDENNES
LUXEMBOURG
Luxembourg
SAAR BASIN
Saarbrücken
Metz
Strasbourg
Mulhouse
Belfort
LORRAINE
ALSACE
VOSGES
Dunkerque
Calais
Boulogne
Lille
COAL
IRON
Somme R.
Amiens
St. Quentin
Aisne
Reims
Oise
Seine R.
Marne
Châlons
Nancy
Épinal
Dieppe
Havre
Rouen
St. Denis
Versailles
Paris
Chartres
Fontainebleau
Troyes
Langres
Cherbourg
Caen
NORMANDY
CHANNEL ISLANDS (British)
St. Malo
Brest
BRITTANY
DAIRY PRODUCTS
APPLES
SARDINES
RYE
Rennes
Lorient
Le Mans
Sarthe R.
Loir R.
Orléans
Loire
Angers
Tours
Cher R.
BELLE ILE
St. Nazaire
Nantes
TUNNY FISH
Bourges
Dijon
Besançon
Doubs R.
Le Creusot
Chalon
Mâcon
Saône
FRANCE
WHEAT
GRAPES
MIXED FARMING
CATTLE
Poitiers
Creuse
Vienne R.
Allier
OLERON
Rochefort
Limoges
Clermont-Ferrand
Mt. Dore
AUVERGNE
Lyon
Rhône
St. Étienne
Isère
Grenoble
Valence
CENTRAL PLATEAU
SHEEP
CEVENNES
Alais
Bordeaux
Gironde R.
Dordogne
Isle R.
Lot R.
Garonne R.
OYSTERS
BAY OF BISCAY
Bayonne
San Sebastian
Adour R.
Montauban
Tarn
Toulouse
Pau
Lourdes
Carcassonne
Béziers
Montpellier
Nimes
Avignon
OLIVES
Marseille
Toulon
Nice
Cannes
MONACO
Mouths of the Rhône
Gulf of the Lion
Perpignan
ANDORRA
Maladetta 11,168
PYRENEES
SPAIN
Ebro R.
Zaragoza
Barcelona
MEDITERRANEAN
SWITZERLAND
Bern
Lausanne
Lake of Geneva
Geneva
Mt. Blanc 15,780
Mt. Cenis
Turin (Torino)
Po
ATLANTIC OCEAN
COAL, WOOL, MACHINERY, IRON & STEEL GOODS, RUBBER FROM GREAT BRITAIN
COAL
COTTON, MINERAL OILS, COPPER, WHEAT & FLOUR, MACHINERY FROM UNITED STATES
COFFEE FROM BRAZIL
WOOL, WHEAT, HIDES & SKINS, MEAT FROM SOUTH AMERICA AND AUSTRALIA
CLOTHING, IRON & STEEL GOODS, AUTOMOBILES TO GREAT BRITAIN & OTHER EUROPEAN COUNTRIES, UNITED STATES, AND SOUTH AMERICA
SILK GOODS AND OTHER TEXTILES,
LUMBER AND WINES TO GREAT BRITAIN
COAL FROM GREAT BRITAIN
WINES, COTTON GOODS, MACHINERY TO SOUTH AMERICA AND FRENCH COLONIES IN AFRICA AND ASIA
WHEAT, MINERAL OILS, COPPER FROM UNITED STATES
WHEAT, CORN, WOOL, HIDES & SKINS, COFFEE, CACAO, SUGAR FROM SOUTH AMERICA
OIL SEEDS, RUBBER, CACAO, SUGAR, RICE FROM FRENCH COLONIES IN AFRICA AND ASIA
COTTON & WOOLEN GOODS, WOOD PULP & PAPER, POTASH, TOYS, FURS, TO UNITED STATES
IRON & STEEL GOODS, MACHINERY, CHEMICALS, TEXTILES, LEATHER, GLASS TO EUROPEAN COUNTRIES, CHINA, DYES, JAPAN, & CHINA, SOUTH AMERICA
LUMBER, WOOD PULP, BUTTER FROM BALTIC SEA COUNTRIES, IRON ORE FROM SWEDEN
COTTON, COPPER, WHEAT & FLOUR, MINERAL OILS FROM UNITED STATES
WOOL, WHEAT, HIDES & SKINS FROM SOUTH AMERICA, AUSTRALIA, AND SOUTH AFRICA
OIL SEEDS FROM MANY PARTS OF THE WORLD
COTTON & WOOLEN YARN FROM GREAT BRITAIN
LUMBER
CHEMICALS, OLIVE OIL, PERFUMES, FRUIT & NUTS
WHEAT, MINERAL OILS FROM UNITED STATES
Scale of statute miles
0 25 50 100 150 200
☆ Capitals of countries
● Chief seaports
◎ Capitals of minor divisions
Navigable rivers
Principal canals
C=COPPER K=POTASH S=SILVER
G=GOLD L=LEAD Z=ZINC
Land below sea level
Uplands and plateaus
Swamps and marshes
Old, worn-down mountains
Lowlands and interior plains
Young, rugged mountains
8° Marrakesh C 6° Gibraltar D Long. 4° West E from 2° Green F wich 0° Longi G tude 2° East H from 4° Green J wich 6° K

CENTRAL EUROPE

POLITICAL AND ECONOMIC MAP

Map Plate, Patented July 5, 1921   Method of Making Maps, Patented July 5, 1921



L 10° M 12° N 14° O 16° P 18° Stockholm R 20° S 22° T Hammerfest 24° U 26° V 28° W
BALTIC SEA
COAL, LUMBER & PULP WOOD, ZINC TO EUROPEAN COUNTRIES
COTTON, WOOL, WHEAT & FLOUR FROM U.S. & SOUTH AMERICA
MACHINERY, IRON & STEEL FROM EUROPEAN COUNTRIES
DENMARK
Aarhus
Copenhagen
Horsens
Odense
FYEN
ZEALAND
LAALAND
FALSTER
SWEDEN
Malmö
Trelleborg
BORNHOLM
RÜGEN I.
Pomeranian Bay
Memel
LITHUANIA
Memel R.
Kovno
Vilia R.
Vilna (Wilno)
Minsk
WHITE RUSSIA
Gulf of Danzig
FREE CITY OF DANZIG
Gdynia
Königsberg
EAST PRUSSIA (Part of Germany)
GRAIN AND LIVESTOCK
Allenstein
Grodno
Niemen
Schara R.
LUMBER PULP WOOD
Bialystok
Köslin
Schleswig
Kiel Canal
Kiel
Lübeck Bay
Stralsund
Rostock
Lübeck
Altona
Hamburg
DAIRY PRODUCTS
CATTLE
SHEEP
Stettin
Oder R.
Vistula R.
Bydgoszcz
Narew R.
Bremerhaven
Bremen
Elbe
Weser
Aller R.
RYE, OATS, POTATOES, CATTLE
PIGS AND
Havel
Netze
Warta
Berlin
Potsdam
Spree
LIGNITE
Frankfurt on Oder
RYE, OATS,
SUGAR BEETS
Posen (Poznan)
Warsaw (Warszawa)
Vistula
Bug
POTATOES
Brest Litovsk (Brzesc Litewski)
Pinsk
Pripet
Rokitno Swamps
Hannover
Braunschweig
IRON
Magdeburg
Kalisz
Lodz
POLAND
Kowel
Goryn R.
POTASH
HARZ MTS.
LIGNITE
Oder LIGNITE
GRAIN AND LIVESTOCK
Pilica R.
LUMBER
Radom
Lublin
Bug
SUGAR BEETS
Rowne
Halle
Leipzig
Cassel
Göttingen
Erfurt
Dresden
Görlitz
SUGAR BEETS
Liegnitz
Breslau
Oder
Czestochowa
ZINC
Kielce
FLAX,
BARLEY, WHEAT,
UKRAINE
THURINGIAN FOREST
Chemnitz
SUDETES
COAL
IRON
Gleiwitz
Krolewska Huta
Sosnowiec
Vistula
San R.
POTATOES,
Lemberg (Lwow)
CATTLE
Giessen
Wiesbaden
Plauen
ORE MOUNTAINS
Usti
SUGAR BEETS
Prague (Praha)
LIGNITE
Krakow
LUMBER
CARPATHIAN MOUNTAINS
OIL
Przemysl
Dniester
Frankfurt on Main
Cheb
BOHEMIA
GRAIN
Ostrava Moravska
COAL
Kolomyja
Pruth R.
Würzburg
GRAPES
Main
HOPS
Pilsen (Plzen)
AND
Olomouc
Czernauti
Mannheim
Nürnberg
Jihlava
LIVESTOCK
CZECHOSLOVAKIA
RYE, OATS,
Budejovice
Brünn (Brno)
LIGNITE
IRON
Kosice
Mukacevo
Karlsruhe
Regensburg
Danube
BOHEMIAN FOREST
Morava R.
Vah
Baden
Stuttgart
WHEAT,
BARLEY,
Augsburg
Passau
OATS, CATTLE
Linz
Vienna (Wien)
SUGAR BEETS
Bratislava
Ban Stiavnica
Miskolcz
Tokay
TOBACCO
Debreczen
Ulm
Danube
CATTLE
Munich (München)
LIGNITE
Steyr
COAL
Wiener Neustadt
Budapest
Oradea Mare
Lake of Constance
Salzburg
Enns
HUNGARY
WHEAT
CORN
AND
Cluj
CORN AND WHEAT
TRANSYLVANIA
Zurich
St. Gallen
Innsbruck
AUSTRIA
Gross Glockner
Graz
Raab
BAKONY FOREST
Danube
Kecskemet
Koros
HEMP
Hodmezo Vasarhely
Arad
Lake Balaton
PIGS
Szeged
CATTLE
Klagenfurt
Mur R.
Drau
Maribor
Pecs
Maros
RUMANIA
Brasov
SWITZERLAND
ALPS
Bozen (Bolzano)
Trent (Trento)
Drava
COAL
Subotitsa
Temesvar
TRANSYLVANIAN ALPS
Udine
Ljubljana
GRAPES
PLUMS
CORN
Novi Sad
Lake Como
Treviso
RICE
Trieste
Zagreb
WHEAT
Sava
PIGS
Osijek
CATTLE
IRON
COAL
Vrsac
Iron Gate
CORN
WHEAT
Milan (Milano)
Como
Verona
Brescia
Padua (Padova)
Venice (Venezia)
Gulf of Venice
ISTRIA
Fiume
Brod
Craiova
CATTLE
Po
DAIRY
Ferrara
Banjaluka
PLUMS
Belgrade (Beograd)
Kragujevac
Danube
Pleven
Alessandria
PRODUCTS
YUGOSLAVIA
Genoa (Genova)
Modena
Bologna
HEMP
Ravenna
Rimini
LACE, TEXTILES AND GLASSWARE TO EUROPEAN COUNTRIES AND U.S.
FISH
LUMBER
Zara
DINARIC ALPS
Sarajevo
Drina
Nish
BALKAN MTS.
Gulf of Genoa
Spezia
Carrara
SAN MARINO
Pisa
Arno
Leghorn (Livorno)
Florence (Firenze)
Ancona
ADRIATIC SEA
Spalato (Split)
DALMATIA
Mostar
Novi Pazar
Sofia (Sofiya)
BULGARIA
Struma
Siena
Perugia
APENNINES
LISSA I.
LAGOSTA I.
Ragusa (Dubrovnik)
Cattaro (Kotor)
Scutari Lake
Scutari
Skoplje
Vardar
Strumitsa
ELBA I.
CORSICA (Part of France)
Ajaccio
Tiber R.
Mte. Corno
Chieti
COAL FROM GREAT BRITAIN
WHEAT AND MINERAL OIL FROM UNITED STATES
ALBANIA
Tirana
Bitolj
Salonika
GREECE
TYRRHENIAN SEA
Civitavecchia
Rome (Roma)
Gaeta
Mte. Gargano
GRAPES
OLIVE OIL, CHEESE, FRUITS AND NUTS TO U.S.
COTTON, WHEAT, MINERAL OILS FROM UNITED STATES
1 2 3 4 5 6 7 8
54° 52° 50° 48° 46° 44° 42°
Irkutsk
Vladivostok
L 10° M Longitude 12° N East 14° from O Messina 16° Greenwich P 18° Cape Town R 20° S 22° T

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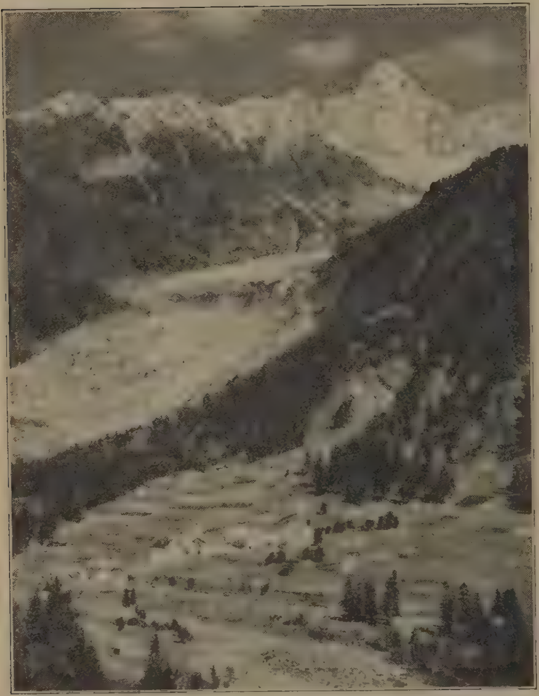

Figure 139. A village surrounded by farm land in the foothills of the French Alps. Notice the snow-capped mountains in the distance, and the glacier moving slowly down the valley beyond the village.

5. Among the Mountains of France

From the map on pages 140–141 name two regions of young, rugged mountains of which France has a share. Name also a small region of old, worn-down mountains in eastern France. In what way do you think these mountain regions are of the greatest value to the French people?

Cotton-manufacturing in the Vosges. In the valleys among the Vosges Mountains there are many towns where cotton goods are manufactured. The cotton industry began there long ago when the spinning and weaving were done in the homes of the people. Today the work is done in factories, many of which use hydroelectric power from the mountain streams, and because of its early start, the region is one of the important textile-manufacturing districts of France.

The Rhine Valley. The map shows that east of the Vosges France has a small share of the valley of the Rhine. You will learn more about this valley when you visit Germany. In the French section there are valuable deposits of potash salts, which, you will remember, are used in making fertilizers. These deposits make France second only to Germany in the mining and export of potash.

The French Alps. When you were studying "Home Life in Far-away Lands," you learned about the life of the people in the Swiss Alps. The people of the French Alps live much the same way — tending their cattle and goats, raising small crops on their tiny patches of level land, and supplying the needs of tourists. *See Figure 139.*

The only large city of the region is Grenoble, on a tributary to the Rhône. Long ago Grenoble became a center for the manufacture of gloves from goatskins, and it is still the great glove-manufacturing city of France. In recent years, however, its industries have increased greatly in number and kind because hydroelectric plants have been built along the swift-flowing mountain streams, providing abundant power for manufacturing. Among the newer industries of Grenoble the making of chemicals and the manufacture of machinery for use in hydroelectric plants are especially important.

The Riviera. On the map trace the mountainous coast of the Mediterranean from Marseille to Genoa, in Italy. This coast is called the Riviera, and it is a great winter playground for people from the cooler countries of Europe and America. The mountain wall of the Alps shuts out the cold winds from the north, and the winter weather is so warm that the visitors can enjoy all the out-of-door sports and pleasures that belong to summer in their homelands. *See Figure 140.*

The mountains rise steeply from the blue Mediterranean, and on their slopes are vineyards, olive groves, and acres and acres of roses, hyacinths, sweet peas, and many other lovely flowers. These flowers are grown for use in an industry for which the French are famous, — the making of perfumes from the oil in the blossoms.

Corsica. Turn to the map on pages 140–141 again and find Corsica (*L7–8*). This island belongs to France, but the people are of Italian descent. Because the island is mountainous, most of the people live along the coasts. They have vineyards and groves of olives and other fruit trees, and they keep sheep and goats.

The Pyrenees. The map shows that the Pyrenees rise like a great wall, separating France from Spain. They form such a barrier that for many years the only railroads connecting the two countries ran around the ends of the mountains. Even now only two railroad lines actually cross the mountains.

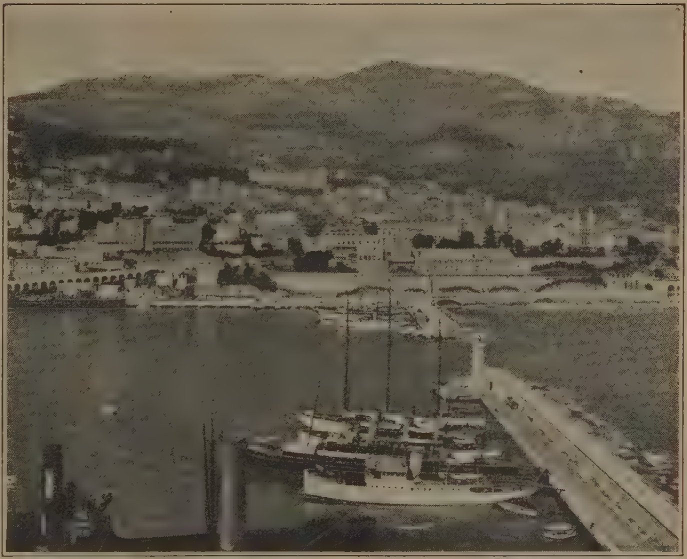
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Figure 140. Monte Carlo, a famous winter resort on the French Riviera. Monte Carlo is the largest town in the little principality of Monaco, which has a government independent of that of France.

In the valleys among the Pyrenees there are a few small villages where the people carry on a little farming, but the principal use of the mountains is for pasturing cattle and sheep from the bordering lowland in the summer. To the French people this region is valuable chiefly for its many swift-flowing streams which can be used to make hydroelectric power.

Making up for the shortage of coal. By this time you know the answer to the question asked at the beginning of this section. The mountains of France are of great value to the people because their water power helps to make up for the shortage of coal in the country. Already France is using more hydroelectric power than any other European country except Italy, and its mountain streams can provide nearly twice as much again.

A Small Neighbor of France

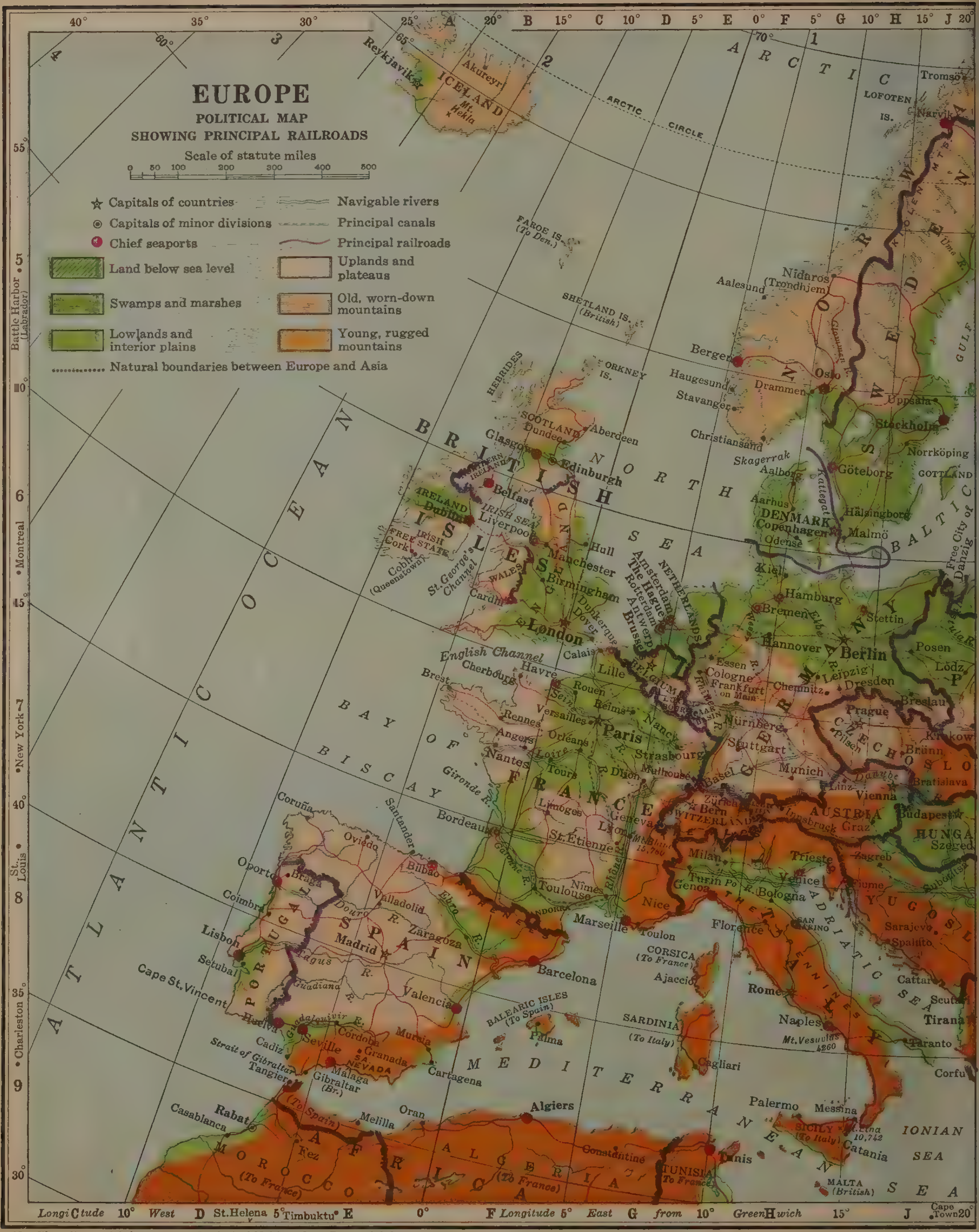
Andorra. Hidden away in the heights of the Pyrenees, between France and Spain, is tiny Andorra. It is an independent country, but it enjoys the protection of the French nation. Its people number less than 5500, and they live in six little villages which can be reached only through mountain passes which are buried in snow for half the year. They make a poor living with their flocks and herds; but they care more for freedom than for comfort, and they do not seem to mind being almost forgotten by the rest of the world.

A playground test. 1. Tell where you would go in France in the winter time to enjoy summer sports. Riviera

2. Tell where you would go in the summer time to enjoy mountain climbing. French

3. Tell where you would go in the summer to enjoy the pleasures of the seashore. Coast Britto

4. Explain why the Pyrenees have few summer visitors compared with the Alps.



EUROPE

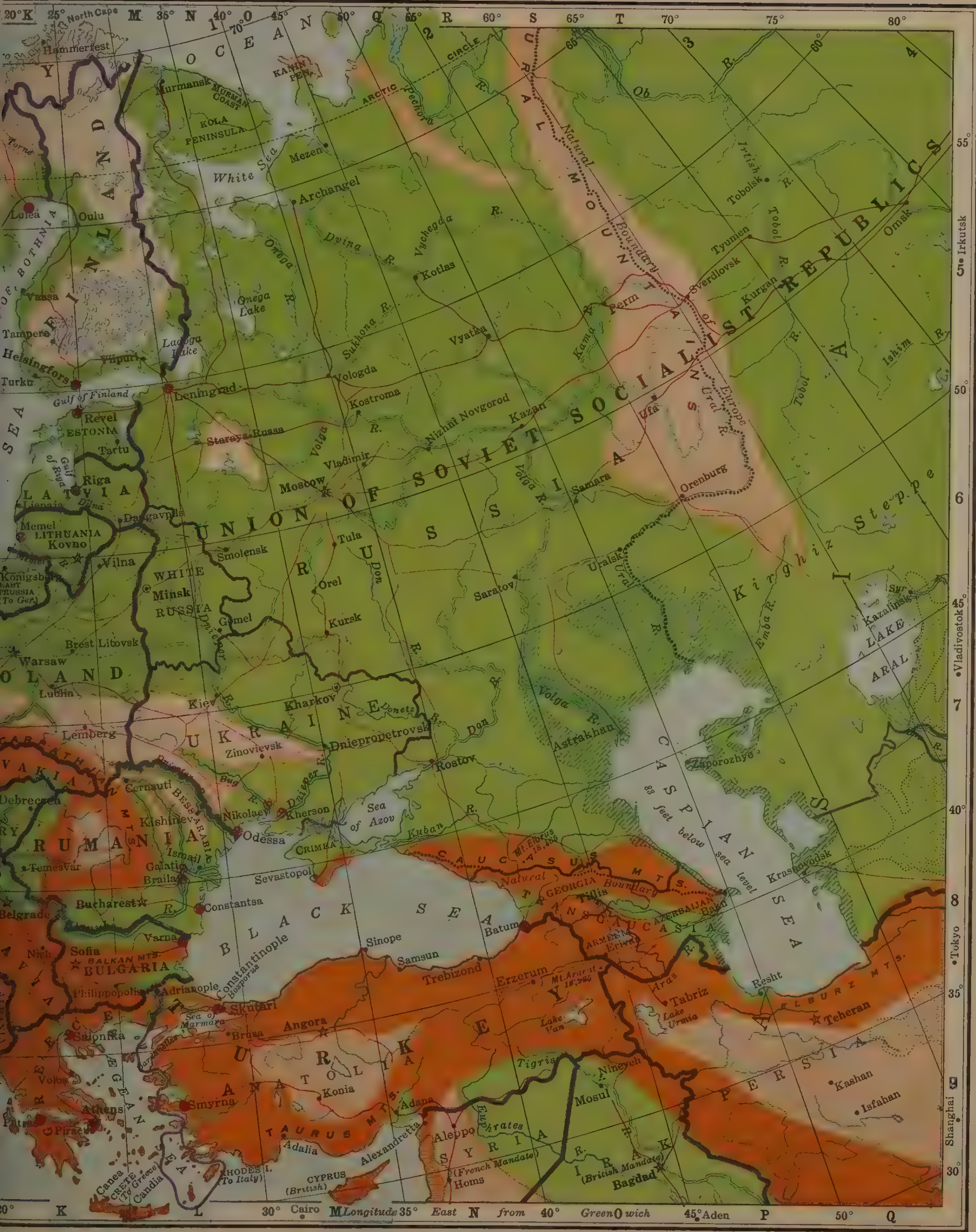
POLITICAL MAP
SHOWING PRINCIPAL RAILROADS

Scale of statute miles

☆ Capitals of countries	Navigable rivers
◉ Capitals of minor divisions	Principal canals
● Chief seaports	Principal railroads
Land below sea level	Uplands and plateaus
Swamps and marshes	Old, worn-down mountains
Lowlands and interior plains	Young, rugged mountains
.... Natural boundaries between Europe and Asia	

0 50 100 200 300 400 500
40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20°
A B C D E F G H J
1 2 3 4 5 6 7 8 9
60° 65° 70° 55 50 45 40 35 30
ARCTIC CIRCLE
Reykjavik
ICELAND
Akureyri
Mt. Hekla
FAROE IS. (To Den.)
SHETLAND IS. (British)
ORKNEY IS.
HEBRIDES
ATLANTIC OCEAN
BRITISH ISLES
SCOTLAND
Aberdeen
Dundee
Glasgow
Edinburgh
NORTHERN IRELAND
Belfast
IRELAND
Dublin
IRISH FREE STATE
Cork
Cobh (Queenstown)
IRISH SEA
St. George's Channel
Liverpool
Manchester
Hull
WALES
Birmingham
Cardiff
ENGLAND
London
Dover
English Channel
NORTH SEA
Battle Harbor (Labrador)
Montreal
New York
St. Louis
Charleston
ARCTIC
LOFOTEN IS.
Tromsö
Narvik
NORWAY
SWEDEN
KÖLEN MTS.
Ume
Nidaros (Trondhjem)
Aalesund
Glommen
Bergen
Haugesund
Drammen
Oslo
Stavanger
Christiansand
Skagerrak
Uppsala
Stockholm
Norrköping
GOTTLAND
Göteborg
Kattegat
Aalborg
Aarhus
DENMARK
Copenhagen
Hälsingborg
Malmö
Odense
BALTIC
GULF
Free City of Danzig
Kiel
Hamburg
Bremen
Elbe
Weser
Stettin
Hannover
Berlin
GERMANY
Posen
Lodz
Vistula R.
NETHERLANDS
Amsterdam
The Hague
Rotterdam
Antwerp
Brussels
BELGIUM
LUXEMBURG
SAAR BASIN
Dunkerque
Calais
Lille
Essen
Cologne
Frankfurt on Main
Rhine R.
Leipzig
Chemnitz
Dresden
Breslau
Prague
Pilsen
CZECHOSLOVAKIA
Krakow
Brünn
Nürnberg
Stuttgart
Munich
Danube
Linz
Vienna
Bratislava
Budapest
HUNGARY
Szeged
AUSTRIA
Innsbruck
Graz
Brest
Cherbourg
Havre
Rouen
Seine
Reims
Versailles
Paris
Nancy
Strasbourg
Rennes
Angers
Orléans
Loire
Nantes
Tours
Dijon
Mulhouse
Basel
Zürich
Bern
SWITZERLAND
Geneva
Mt. Blanc 15,780
FRANCE
Limoges
Lyon
St. Etienne
Rhone R.
BAY OF BISCAY
Gironde R.
Bordeaux
Garonne R.
Toulouse
Nîmes
Marseille
Toulon
Nice
ANDORRA
PYRENEES
Coruña
Oviedo
Santander
Bilbao
Oporto
Braga
Douro R.
Valladolid
Ebro R.
Zaragoza
Coimbra
PORTUGAL
SPAIN
Madrid
Tagus R.
Lisbon
Setubal
Guadiana R.
Cape St. Vincent
Valencia
Barcelona
Guadalquivir R.
Huelva
Seville
Cordoba
Murcia
Cadiz
Granada
SA. NEVADA
Malaga
Cartagena
Gibraltar (Br.)
Strait of Gibraltar
Tangier
(To Spain)
Melilla
Oran
Rabat
Casablanca
Fez
MOROCCO (To France)
AFRICA
ALGERIA (To France)
Algiers
Constantine
Tunis
TUNISIA To France
BALEARIC ISLES (To Spain)
Palma
CORSICA (To France)
Ajaccio
SARDINIA (To Italy)
Cagliari
MEDITERRANEAN SEA
Milan
Trieste
Venice
Turin
Po R.
Genoa
Bologna
Florence
SAN MARINO
APENNINES
ITALY
Rome
Naples
Mt. Vesuvius 4260
Taranto
Palermo
Messina
SICILY (To Italy)
Mt. Etna 10,742
Catania
MALTA (British)
IONIAN SEA
ADRIATIC SEA
Zagreb
Fiume
Sarajevo
Spalato
YUGOSLAVIA
Cattaro
Scutari
Tirana
Corfu
Danube
Longitude 10° West from Greenwich
St. Helena
Timbuktu
Cape Town

Map Plate, Patented July 5, 1921 • Method of Making Maps, Patented July 5, 1921



North Cape
Hammerfest
OCEAN
Murmansk
MURMAN COAST
KOLA PENINSULA
KANIN PEN.
ARCTIC CIRCLE
White Sea
Mezen
Archangel
Pechora
Ob R.
URAL MOUNTAINS
Natural Boundary of Europe
Irtish R.
Tobolsk
Tobol R.
Tyumen
Omsk
Irkutsk
FINLAND
Luleå
Oulu
GULF OF BOTHNIA
Vaasa
Tampere
Helsingfors
Turku
Viipuri
Ladoga Lake
Onega Lake
Onega R.
Dvina R.
Vychegda R.
Kotlas
Sukhona R.
Vyatka
Perm
Kama R.
Sverdlovsk
Kurgan
Ishim R.
Leningrad
Gulf of Finland
Revel
ESTONIA
Tartu
Vologda
Kostroma
Nizhni Novgorod
Kazan
Ufa
Ural R.
Staraya Russa
Volga R.
Vladimir
Moscow
Samara
Orenburg
UNION OF SOVIET SOCIALIST REPUBLICS
RUSSIA
Gulf of Riga
Riga
LATVIA
Liepaja
Dvina
Daugavpils
Memel
LITHUANIA
Kovno
Vilna
Königsberg
EAST PRUSSIA (To Ger.)
Smolensk
Tula
WHITE RUSSIA
Minsk
Orel
Don R.
Saratov
Uralsk
Kirghiz Steppe
Emba R.
Syr
Kazalinsk
LAKE ARAL
Vladivostok
Gomel
Dnieper R.
Kursk
Brest Litovsk
Warsaw
POLAND
Lublin
Kiev
Kharkov
UKRAINE
Donetz R.
Don R.
Volga R.
Astrakhan
CASPIAN SEA
88 feet below sea level
Zaporozhye
Lemberg
CARPATHIAN
Zinovievsk
Dniepropetrovsk
Rostov
Dniester R.
Bug R.
Cernauti
Debreczen
BESSARABIA
Kishinev
Nikolaev
Kherson
Sea of Azov
Odessa
Kuban R.
RUMANIA
Ismail
Temesvar
Galatz
Braila
CRIMEA
Sevastopol
CAUCASUS MTS.
Mt. Elbrus 18,465
Natural Boundary
GEORGIA
Tiflis
TRANSCAUCASIA
AZERBAIJAN
Baku
Krasnovodsk
Belgrade
Bucharest
Constantsa
BLACK SEA
Batum
ARMENIA
Erivan
Varna
Sofia
BALKAN MTS.
BULGARIA
Nish
Sinope
Samsun
Trebizond
Erzerum
Mt. Ararat 16,916
Aras R.
Resht
ELBURZ MTS.
Philippopolis
Adrianople
Constantinople
Bosporus
Sea of Marmara
Skutari
Brusa
Angora
TURKEY
Lake Van
Tabriz
Lake Urmia
Teheran
Tokyo
Salonika
GREECE
AEGEAN SEA
Dardanelles
ANATOLIA
Konia
Tigris
Nineveh
Mosul
PERSIA
Kashan
Isfahan
Volos
Athens
Patras
Piraeus
Smyrna
TAURUS MTS.
Adana
Aleppo
Alexandretta
Euphrates
SYRIA (French Mandate)
IRAK (British Mandate)
Bagdad
Shanghai
Adalia
Canea
CRETE (To Greece)
Candia
RHODES I. (To Italy)
CYPRUS (British)
Homs
Cairo
Longitude East from Greenwich
Aden
20° 25° 30° 35° 40° 45° 50° 55° 60° 65° 70° 75° 80°
30° 35° 40° 45° 50° 55° 60° 65°
K L M N O P Q R S T
1 2 3 4 5 6 7 8 9

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Reminders of home. Name one or more places in France where each person described below would find something to remind him of home.

1. A dairy farmer from New England.
2. A steel-manufacturer from Pittsburgh.
3. A rubber-manufacturer from Akron. Cler
4. A Gloucester fisherman. Britti
5. A cotton-manufacturer from Georgia.
6. A coal-miner from Pennsylvania. Northe
7. A sugar-beet grower from Utah.
8. A farmer from the corn belt.
9. A California grape-grower.
10. A glove-manufacturer from New York State. Greno
11. A silk-manufacturer from Paterson, New Jersey. Lyon
12. An automobile-manufacturer from Detroit.

A manufacturing test. 1. Use the map on pages 140–141 to point out the three leading cotton-manufacturing districts of France. Explain what advantages each district has for this industry. Tell which one of them is also a woolen-and-linen manufacturing district.

2. Point out the great silk-manufacturing district of France, and explain why the industry has devoloped there.

3. Point out the chief iron-and-steel manufacturing districts of France. Tell which ones have grown up where iron ore is mined, and which ones where coal is mined.

4. Point out the great glove-manufacturing center of France, and explain why the industry has developed there.

Finding likenesses. Tell of at least one way in which the following pairs of cities are alike: (1) London and Paris; (2) Southampton and Cherbourg; (3) Manchester and Rouen; (4) Liverpool and Havre; (5) Dover and Calais; (6) Birmingham and St. Étienne; (7) Leeds and Lille; (8) Stoke on Trent and Limoges.

Facts about Paris. 1. Tell how Paris ranks in population among (1) the cities of France; (2) the cities of Europe; (3) the cities of the world. 2. Name three ways in which Paris is a great transportation center. 3. Tell why American women are especially interested in Paris.

Some comparisons to explain. In the three statements below you will find some comparisons between France and Great Britain. Explain what each comparison means by answering the questions that follow it.

1. France is nearly two and a half times as large as Great Britain, and has two million fewer people. (1) Which country is more densely populated? (2) Which one needs more food?

2. In Great Britain $\frac{4}{10}$ of the people who work are engaged in manufacturing, and less than $\frac{1}{10}$ are farmers. In France less than $\frac{3}{10}$ of the workers are engaged in manufacturing, and $\frac{4}{10}$ are farmers. (1) In which country is farming more important? (2) In which country is manufacturing more important? (3) Which country must import more food?

3. The total value of the exports and imports of Great Britain is about twice that of the exports and imports of France. In which country is foreign trade more important?

Giving reasons. The comparisons which you have just studied show that farming is more important in France than in Great Britain, and that manufacturing and foreign trade are more important in Great Britain than in France. Prove that you understand the reasons for these facts by completing the sentences below:

1. The French people carry on more farming than the British because they have more _____ land suitable for raising _____.

2. The British carry on more manufacturing than the French because their country is not so well suited to _______, and because they have larger supplies of ____ for power.

3. The British have a greater import trade than the French because their farms produce less ____, and because they need more ___ _________ for their factories.

4. The British have a greater export trade than the French because they carry on more _____________ and therefore have a greater surplus of ____________ goods to sell.

Special credit work. Find out all you can about the Louvre, the Eiffel Tower, the Arc de Triomphe, and the Cathedral of Notre Dame, and tell your classmates about them.

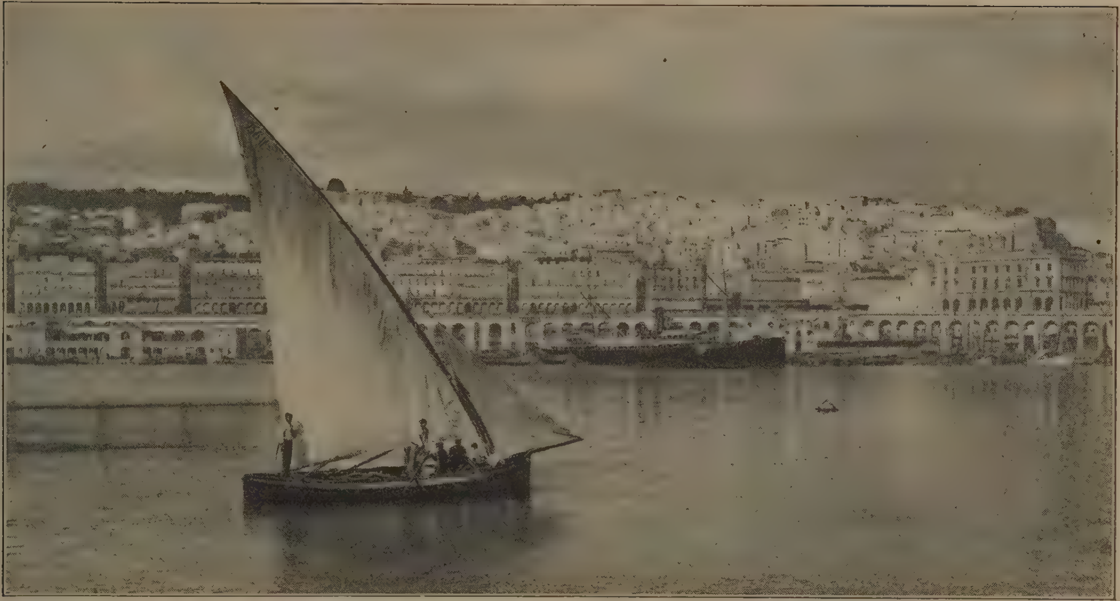


Figure 141. A view of Algiers, the capital and chief seaport of Algeria, as it looks from a boat in the harbor. Notice how the white buildings of the city shine in the brilliant Mediterranean sun. The sailboat is a fishing boat, and the steamer tied up at one of the wharves is a freight and passenger ship.

II. THE POSSESSIONS OF FRANCE

Foreword. Use the maps on pages 42–43 and 148–149 to compare the French possessions in distant lands with those of the British. Which country controls more land in Brit. the Americas? in Asia? Brit What should you say about the extent of the French lands in Africa compared with the extent of the British lands in that continent?

You have learned that the British possessions are very valuable as sources of raw materials and foodstuffs and as markets for manufactured goods. As you study about the possessions of France, watch to see if they serve the French people in the same ways.

1. French Lands in Africa

If we include the island of Madagascar, the French control about the same amount of territory in Africa as do the British. Using the map on pages 148–149 as a help, locate the French possessions in Africa on Figure 42 (p. 49). Where among them do you find the fewest people? What reason does Figure 41 suggest for this very sparse population? What reason does it suggest for the larger numbers of people farther north and south in the French possessions? What parts of the French lands in Africa do you think are most valuable? Why?

The Coastal Possessions in Northern Africa

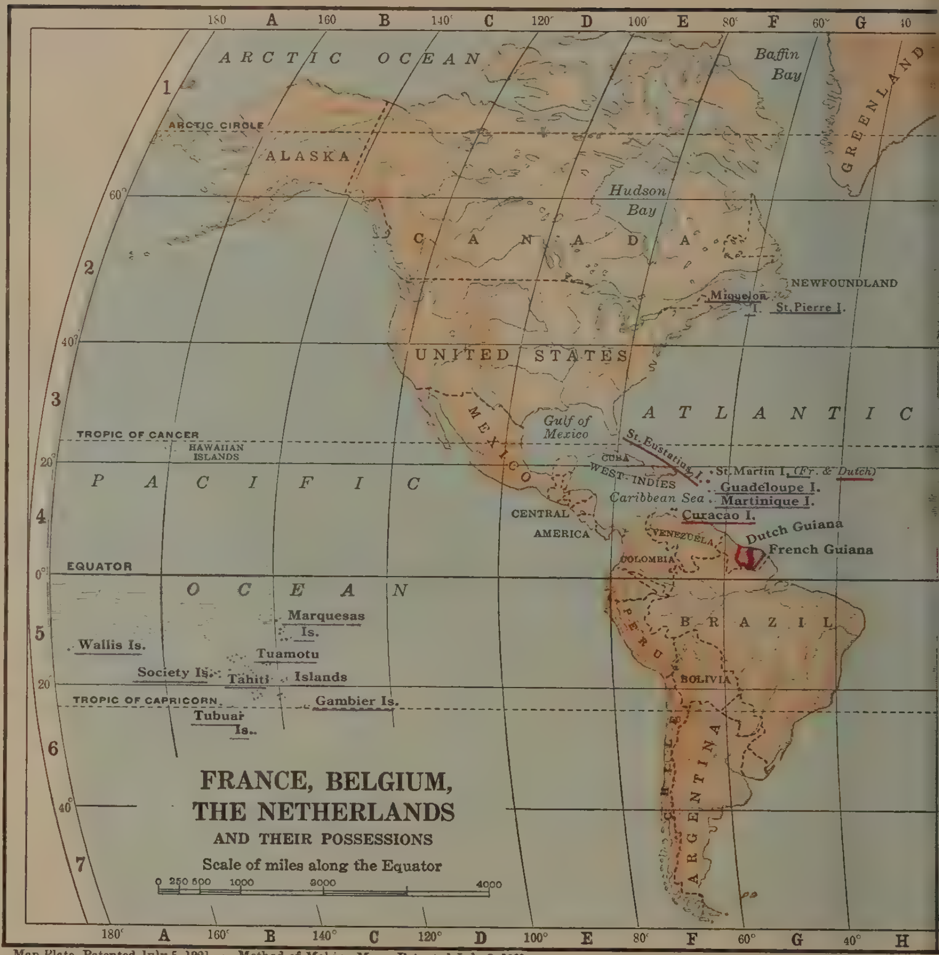
Algeria, Tunisia, and Morocco. The French find it easy to visit their lands in northern Africa, for it is only about 400 miles across the Mediterranean from Marseille to Algiers, the capital of Algeria. *See Figure 141.*

Locate Algeria, Tunisia, and Morocco on the map on pages 226–227. Algeria is a French colony with a French governor. Tunisia and Morocco have native rulers; but they are under French protection, and French officials direct the government.

FRANCE, BELGIUM, THE NETHERLANDS, AND THEIR POSSESSIONS

	AREA IN SQUARE MILES
France	212,659
Algeria, Tunisia, and Morocco	470,480
Madagascar	241,094
Other possessions ✗ in Africa	2,555,172
French possessions in Asia	327,182
French possessions in America	35,906
Total	3,842,493
Belgium	11,755
Belgian Congo	918,000
The Netherlands	13,320
Dutch East Indies	788,000
Dutch possessions in America	54,694

	POPULATION
France	40,960,000
Algeria, Tunisia, and Morocco	12,453,719
Madagascar	3,621,342
Other possessions in Africa	19,625,737
French possessions in Asia	21,895,819
French possessions in America	525,649
Total	99,082,266
Belgium	7,932,077
Belgian Congo	8,500,000
The Netherlands	7,625,938
Dutch East Indies	51,881,862
Dutch possessions in America	204,375


FRANCE, BELGIUM, THE NETHERLANDS AND THEIR POSSESSIONS
Scale of miles along the Equator
0 250 500 1000 2000 4000
ARCTIC OCEAN
ARCTIC CIRCLE
ALASKA
Baffin Bay
GREENLAND
Hudson Bay
CANADA
NEWFOUNDLAND
Miquelon I.
St. Pierre I.
UNITED STATES
MEXICO
Gulf of Mexico
ATLANTIC
St. Eustatius
CUBA
WEST INDIES
St. Martin I. (Fr. & Dutch)
Guadeloupe I.
Martinique I.
Caribbean Sea
Curacao I.
CENTRAL AMERICA
VENEZUELA
COLOMBIA
Dutch Guiana
French Guiana
BRAZIL
PERU
BOLIVIA
ARGENTINA
TROPIC OF CANCER
HAWAIIAN ISLANDS
PACIFIC OCEAN
EQUATOR
Marquesas Is.
Wallis Is.
Tuamotu Islands
Society Is.
Tahiti
Gambier Is.
TROPIC OF CAPRICORN
Tubuai Is.
180° A 160° B 140° C 120° D 100° E 80° F 60° G 40° H
1 2 3 4 5 6 7
60° 40° 20° 0° 20 40°

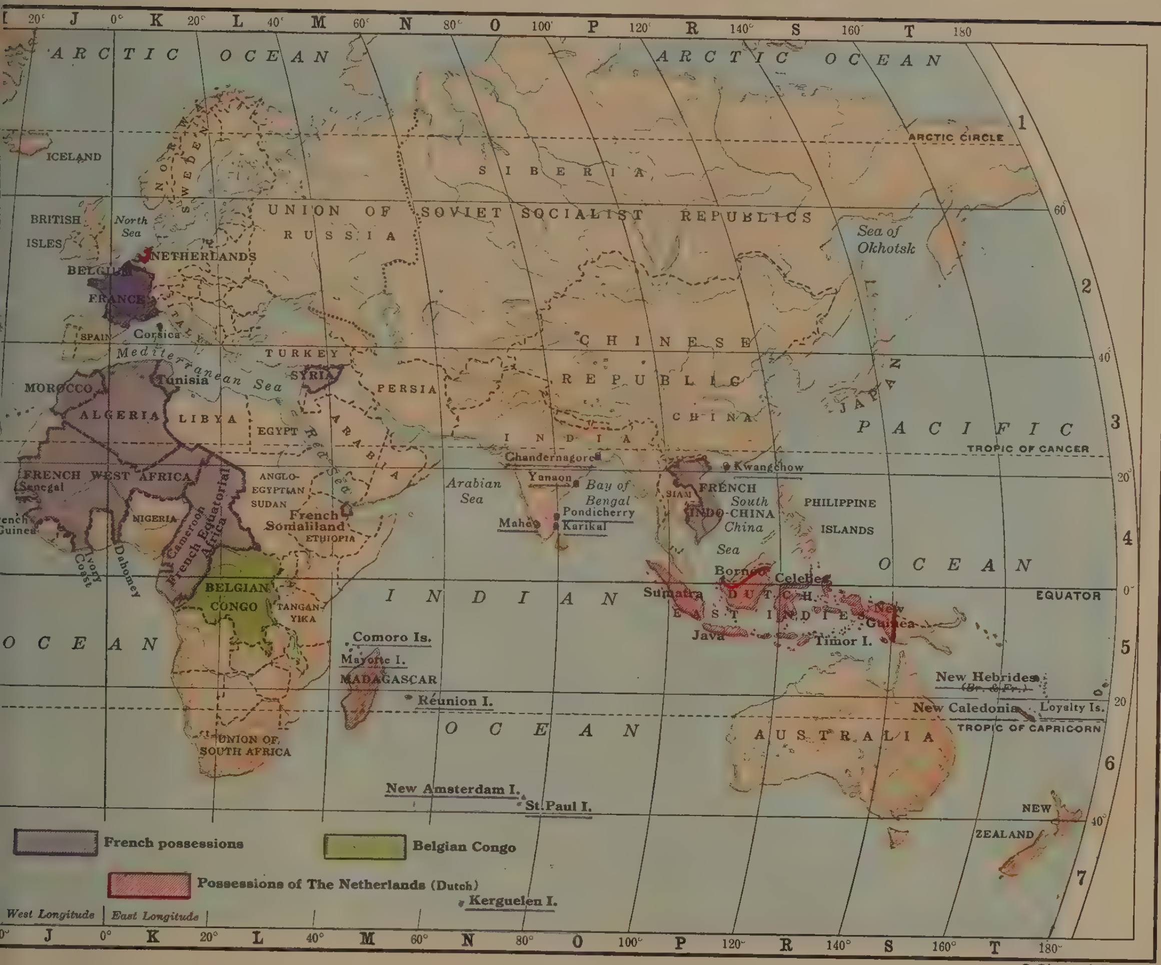
Map Plate, Patented July 5, 1921 · Method of Making Maps, Patented July 5, 1921

The map shows that these French lands include the Atlas Mountains, which border the southern coast of the western Mediterranean. What does Figure 41 (p. 49) show about the rainfall on the seaward slopes of these mountains? Judging from the map on pages 226–227, what kinds of work do you think the people of these French lands do?

The climate of the Atlas region is of the Mediterranean type, like that of the Riviera coast. The summers are hot and dry, and most of the rain falls during the mild winter. The winter weather is so delightful that Algiers has become a winter resort.

Natives and European colonists. The native people of Algeria, Tunisia, and Morocco are mostly Arabs and Berbers, and they are believers in the Mohammedan religion. You learned about the Arabs in your study of "Home Life in Far-away Lands." They are people of the white race, and those in northern Africa are descended from Arabs who came from Arabia long ago. The Berbers are descended from tribes who entered northern Africa from southwestern Asia even earlier than the Arabs.

Many of the native people live and work in the cities and towns, and some are farmers.


ARCTIC OCEAN
ARCTIC CIRCLE
ICELAND
BRITISH ISLES
North Sea
NORWAY
SWEDEN
NETHERLANDS
BELGIUM
FRANCE
SPAIN
Corsica
Mediterranean Sea
UNION OF SOVIET SOCIALIST REPUBLICS
RUSSIA
SIBERIA
Sea of Okhotsk
TURKEY
SYRIA
PERSIA
CHINESE REPUBLIC
CHINA
JAPAN
MOROCCO
Tunisia
ALGERIA
LIBYA
EGYPT
ARABIA
INDIA
Chandernagore
Yanaon
Arabian Sea
Bay of Bengal
Pondicherry
Mahé
Karikal
Kwangchow
FRENCH INDO-CHINA
SIAM
South China Sea
PHILIPPINE ISLANDS
FRENCH WEST AFRICA
Senegal
French Guinea
Ivory Coast
Dahomey
NIGERIA
Cameroon
French Equatorial Africa
ANGLO-EGYPTIAN SUDAN
French Somaliland
ETHIOPIA
BELGIAN CONGO
TANGANYIKA
Comoro Is.
Mayotte I.
MADAGASCAR
Réunion I.
UNION OF SOUTH AFRICA
INDIAN OCEAN
OCEAN
Borneo
Celebes
Sumatra
Java
DUTCH EAST INDIES
New Guinea
Timor I.
PACIFIC OCEAN
TROPIC OF CANCER
EQUATOR
TROPIC OF CAPRICORN
New Hebrides (Br. & Fr.)
New Caledonia
Loyalty Is.
AUSTRALIA
NEW ZEALAND
New Amsterdam I.
St. Paul I.
Kerguelen I.
French possessions
Belgian Congo
Possessions of The Netherlands (Dutch)
West Longitude
East Longitude
J K L M N O P R S T
20° 0° 20° 40° 60° 80° 100° 120° 140° 160° 180°
1 2 3 4 5 6 7

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Large numbers, however, live a half-nomadic life farther inland, where they raise cattle, sheep, and goats. *See Figure 142.*

Many of the natives are skillful in weaving rugs, and others in making fancy leather goods such as slippers, purses, and small handbags. These products of native handwork are displayed in the bazaars in Algiers, Tunis, and other coastal cities, where they find an excellent sale among the tourists.

In addition to the native people in these French possessions there are considerable numbers of colonists from France, Spain, and Italy. Why is it natural that the colonists should come chiefly from those countries? Many of them are farmers, and others carry on business in the cities.

The farm lands. The best farm lands of this northern part of Africa are the narrow, fertile lowlands near the coast and between the mountain ranges. Farming suffers somewhat from the summer drought; but the people overcome this handicap by raising crops such as grapes and olives, which are able to stand the dry weather, and by irrigating other kinds of fruit crops from streams and wells. They also raise large crops of winter wheat and barley. *See Figure 143.*

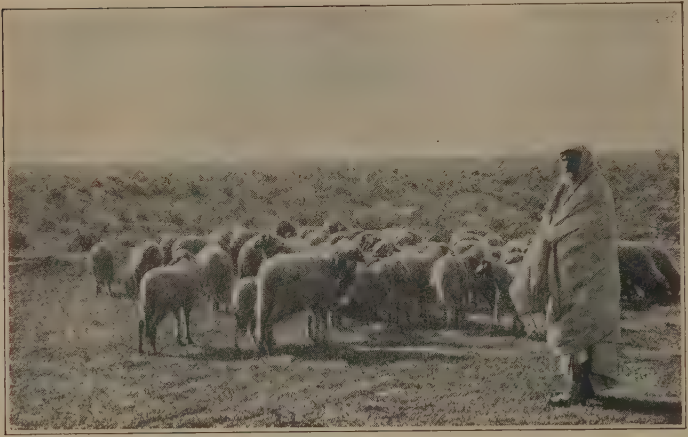

Figure 142. A Berber shepherd and his sheep in Morocco. The sheep raised by the Berbers and Arabs in northern Africa provide considerable quantities of wool for export to other lands.

Metal ores. In both Algeria and Tunisia iron ore, lead, and zinc are mined. Since very little lead and zinc are mined in France, these metal ores are exported chiefly to the home country. The iron ore, on the other hand, goes chiefly to Great Britain. You should be able to give two reasons for this fact. What are they?

hosphate

Another mineral product of the French possessions in northern Africa which is very valuable is phosphate. Tunisia, Algeria, and Morocco rank next to the United States in the production of phosphate rock, and large quantities are exported to France and other European countries. You will remember that phosphate rock is one of the three principal raw materials used in the manufacture of fertilizers. What have you learned about work in France which explains why the home country provides a good market for phosphate from the mines of northern Africa?

A forest product. Among the trees that grow on the slopes of the Atlas Mountains is the cork oak, the bark of which furnishes cork. Some of the natives make their living by stripping the bark from the trees and preparing it for export to France and other countries. *See Figure 144.*

The seaports and their trade. Algiers, the capital and chief seaport of Algeria, is one of the most picturesque cities on the shores of the Mediterranean. The French call it *une ville étincelante* — a shining city — because nearly all the buildings are white, and they fairly shine in the brilliant Mediterranean sun. They cluster closely around the harbor, and climb the green, wooded slopes of the bordering hills.

Algiers has many fine hotels and public buildings, but visitors find their greatest interest in the beautiful old Mohammedan mosques, and in the native bazaars where Arab merchants in white robes and turbans sell their wares. *See Figure 145.*

Special credit work. Find out all you can about how cork is grown, how it is prepared for market, to what countries it is sent, and how it is used.

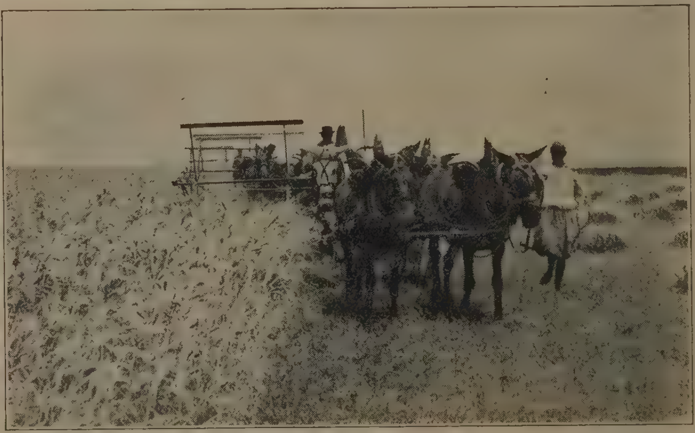

Figure 143. Harvesting a crop of winter wheat on the farm of a European colonist in northern Africa. The man at the right is a native who is employed as a helper on the farm.

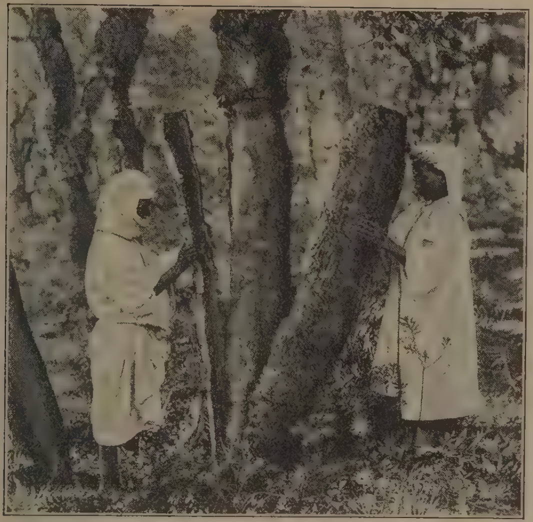

Figure 144. Algerian natives stripping the bark from a cork oak. Cork oaks live to be very old, and the bark can be stripped off at intervals of from six to ten years during the lifetime of the trees.

Tunis, the capital and chief seaport of Tunisia, is much like Algiers. In the harbors of both these ports you will see ships from many distant lands; but you are likely to see more French flags than British or American, for more than half the trade of Algeria and Tunisia is with France. Locate Algiers and Tunis on the map on pages 226–227 (*D3* and *F3*). What foodstuffs do they export? What two raw materials are among their leading exports? If there were room to print more exports on the map, what metal ores would be among them? What do ships bring to Algiers and Tunis from France?

The work of the French. After studying the trade of Algiers and Tunis you will not need to be told that the French possessions in northern Africa are of great value to the home country as sources of foodstuffs and raw materials, and especially as markets for manufactured goods.

Since more people mean greater markets, the French are doing many things to make these colonies attractive to European settlers. They have built thousands of miles of good roads and many hundreds of miles of railroads; they have introduced the telephone and the telegraph; they have improved the harbors; and they have opened up new lands for farming by drilling artesian wells. All these improvements are helping greatly in the development of the north African possessions of France; and as farming, mining, and other kinds of work increase in these lands, they become more and more valuable to the home country. *See Figure 146.*

Some things to explain. Explain why

1. Grapes, olives, wheat, and barley are crops well suited to the climate of the French possessions in northern Africa.
2. Wool is one of the raw materials exported from these possessions of France.
3. The people of France take most of the lead and zinc ores exported from these possessions.
4. The people of France take much less of the exports of iron ore.
5. The French are spending much money to make their possessions in northern Africa attractive to European colonists.
6. The European colonists in these possessions are largely from France, Italy, and Spain.

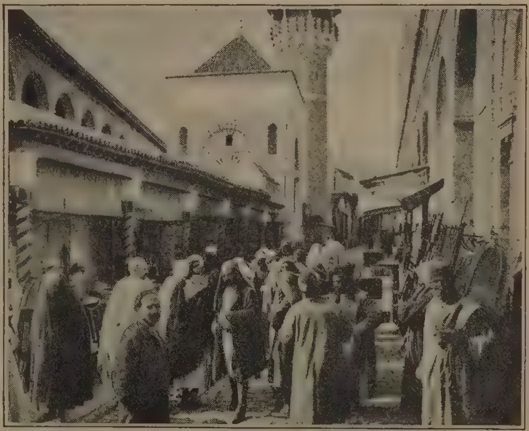

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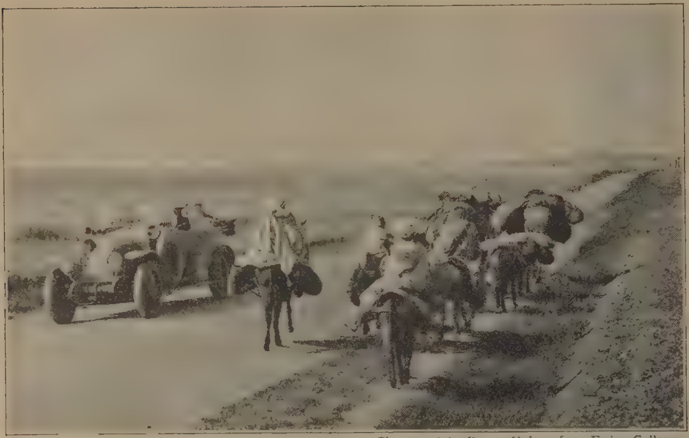
Figure 145. A street bazaar in northern Africa. In Algiers, Tunis, and all the larger cities of northern Africa goods are sold out of doors in open markets. This street is the furniture market in Tunis.



Photograph by Burton Holmes from Ewing Galloway

Figure 146. Old and new means of transportation in northern Africa. The good roads built by the French make possible the use of automobiles, but the natives still use camels and donkeys.

The Sahara

A vast desert. The map on page 50 shows that the French control a large portion of the great Sahara Desert. This, as you know, is the greatest desert in the world. It stretches all the way across northern Africa from the Atlantic Ocean to the Red Sea, a distance greater than that from New York City to San Francisco. The eastern half of it extends to the Mediterranean Sea, but the western half is cut off from the Mediterranean by the Atlas Mountains. Far to the south the desert gradually gives way to the grasslands of the Sudan.

In the Sahara, as in the desert of Arabia, the summer days are very hot and the winter days are very warm. But at night, even in the summer, the air cools off quickly.

Vast stretches of the Sahara are a windswept waste of sand and gravel, and here and there bare, rocky hills rise above its surface. In places the wind has piled the sand up in great dunes which at a distance look like the waves of the sea. Because this great desert is so dry, most of it is useless. What does Figure 42 (p. 49) show about its population?

Life in the oases. The only inhabited spots in the Sahara are the oases, where the water from springs and wells makes possible the growth of crops. During your study of "Home Life in Far-away Lands" you learned about oases in the desert of Arabia. Find the oases of the Sahara Desert on the map on page 46.

Some of the oases of the Sahara are large enough to support good-sized towns; others are small and contain only a few hundred people. The people are chiefly Arabs, and they live in houses with thick walls of sun-dried mud bricks which help to keep out the heat. In gardens which they irrigate from springs and wells, they raise grain, vegetables, and fruits. *See Figure 147.*

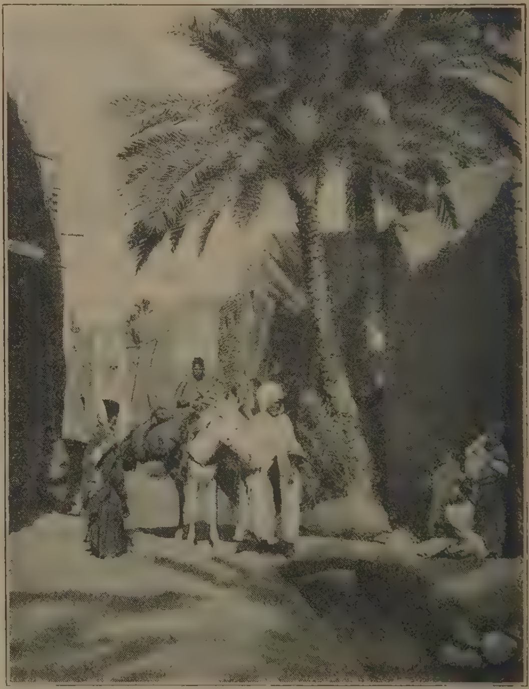
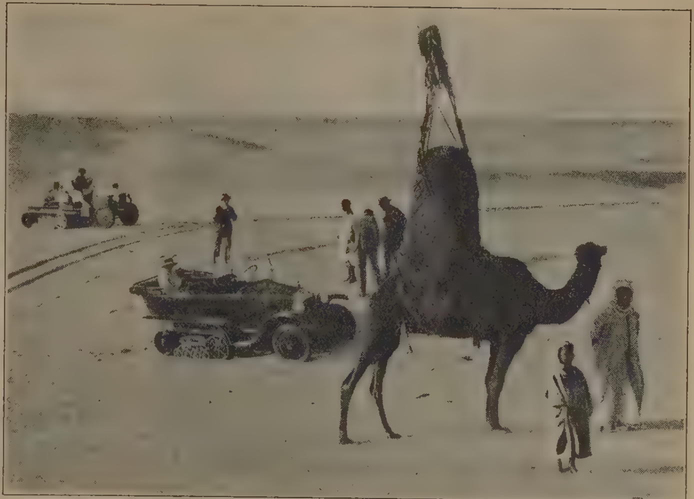


Figure 147. A street in an oasis town in the Sahara. The trees are date palms, and beyond them are some of the mud-brick houses in which the people live.



Photograph by Ewing Galloway, N. Y.

Figure 148. Two ways of traveling in the Sahara Desert. Notice that the automobiles have "caterpillar" wheels so that they can move through the soft, loose sands. On the camel's back is a tall canopy to protect the traveler from the heat of the sun.

In the oases you will see many groves of date palms, for these trees grow especially well under the hot desert sun, provided, of course, that their roots can reach water. Dates are the only export product of any importance from the oases, and large quantities of them are dried and sent to Mediterranean ports for export.

Transportation in the desert. Turn to the map on page 50 and find the railroads which the French have built across the Atlas Mountains to oases on the northern margin of the desert. What reasons can you give for the absence of railroads elsewhere in the Sahara?

Until quite recently anyone wishing to travel in the desert had to join a camel caravan. The caravans move slowly over long-used routes leading from one oasis to another, and from ports on the Mediterranean to Timbuktu and other trading towns in the northern part of the Sudan.

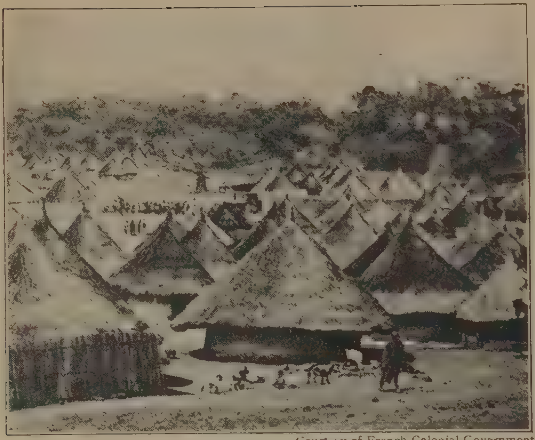
Camel trains are still used to transport goods in many parts of the desert, but along some of the old caravan routes in the north automobiles carrying passengers and mail now plow through the desert sands, covering in a few hours as much distance as a camel train can travel in a week. *See Figure 148.*

French Lands South of the Sahara

Well-populated lands. On the map on page 48 find Timbuktu (*C3*) and notice its location near the big northern bend of the Niger River. What does Figure 42 show about the population of the part of French West Africa south of the latitude of Timbuktu compared with the population of the Sahara region farther north? What reason does Figure 41 suggest for this difference? Turn to the map on pages 148–149 and find the places where French West Africa reaches the Atlantic coast and the Gulf of Guinea. Judging from the map on page 50, what kinds of work do you think are most important in the well-populated part of French West Africa?

The Sudan. Timbuktu is in the northern part of the region of Africa known as the Sudan. This region, as you already know, borders the Sahara on the south, and has enough rain for the growth of grass with scattered clumps of trees. On the west it extends to the Atlantic coast, where the colony of French West Africa known as Senegal is located.

Most of the people of the Sudan are native negroes who make their living by raising cattle and by farming in a simple way. Hides and skins are exports of some importance from this region, but the products in which the people of France are most interested are the peanuts which the natives raise. Peanuts, you will remember, are valuable oil-seeds, and large quantities of them are exported from the French portion of the Sudan to Marseille. *See Figure 149.*



Courtesy of French Colonial Government

Figure 149. One of the native villages in the Sudan region of French West Africa. The people of these villages carry on farming and raise cattle.

Timbuktu is an old Arab trading town which long ago became important as a meeting place for caravan routes from the north. From its port on the Niger, goods can be sent down that river to the coast of the Gulf of Guinea.

For many years the export products of the interior of the French Sudan were either carried northward across the desert by camel caravan to the Mediterranean or were sent down the Niger River to the Gulf of Guinea. Today most of these products are exported through the port of Dakar in Senegal, for the French have built a railroad to connect that port with the town at the head of navigation on the Niger River. Find this railroad on the map on page 50. What advantages has it over the older routes as a means of exporting goods from the Sudan to France?

The French share of the Guinea coast. What did you learn on page 66 about the climate of the coast of the Gulf of Guinea? The French lands here are the Ivory Coast and the coastal portion of Dahomey. The people of these hot, rainy coast lands are mostly native negroes who carry on farming in a simple way, raising foodstuffs for themselves and cacao for export. They also collect the kernels of the wild oil palm and cut mahogany logs in the forests. As in the neighboring British colonies on the Guinea coast, the leading exports are cacao, palm kernels, and palm oil. These go chiefly to France, and in return the French people supply the natives with the cotton goods which they need for clothing.

French Equatorial Africa. Only the southern part of this French colony is truly "equatorial," for it stretches northward to the margin of the Sahara Desert. The equatorial part is a tropical forest, while the part farther north belongs to the Sudan. The people are negroes, and they are so backward that they produce very little for export.

French Somaliland and Madagascar

Somaliland. This little French colony on the Strait of Bab-el-Mandeb is too small and too hot and dry to have any important products. To the French it is valuable chiefly because its port of Jibuti provides a coaling station for ships on the waterway between the Mediterranean Sea and the Indian Ocean.

Madagascar. On the map on page 50 find the island of Madagascar (*H6–7*). This island is more than twice as large as New Zealand and has nearly three times as many people. In spite of these facts it is at present less valuable to France than New Zealand is to Great Britain because it has but few white people. Most of the people are dark-skinned natives who are more like the people of southeastern Asia than like the negroes of the neighboring part of Africa.

The map on page 50 shows that Madagascar may be divided into three regions: the mountains in the east, the interior plateau, and the coastal plain on the west. Because of the southeast trade winds the eastern coast and the eastern slopes of the mountains are rainy and covered with tropical forests. The rest of the island, which has less rain, is chiefly grassland.

Along the hot, moist eastern coast the people raise large quantities of rice and other food crops, while the people of the grasslands farther west raise large numbers of cattle. Among the special products of the island are vanilla beans from which vanilla flavoring is made. Many of the European colonists, who are mostly French, are interested in developing plantations of coffee, cacao, and sugar cane, and in time plantation agriculture may make the island very valuable to France.

Madagascar has much mineral wealth, but as yet mining is carried on in only a few places. At present the most valuable mineral product is graphite. More than three fourths of all the trade is with France. From the map on page 50 name the leading exports and imports.

A product test. 1. Below is a list of some of the products which the French import from their possessions in Africa. Name the colony or region from which each one comes, and point to it on the map.

cork Algeria
cacao
wines
graphite Madagascar
olive oil Tunisia
vanilla beans
lead and zinc ores
wool
dates
wheat
peanuts
phosphate
cattle hides Sudan
palm oil and kernels

2. Now arrange the products correctly under the following headings:

a. French possessions in northern Africa
b. French lands in the Sudan
c. French lands on the Guinea coast
d. Madagascar

3. Make a statement telling which of the four groups of possessions in Africa you think is most valuable to the French as a source of foodstuffs and raw materials.

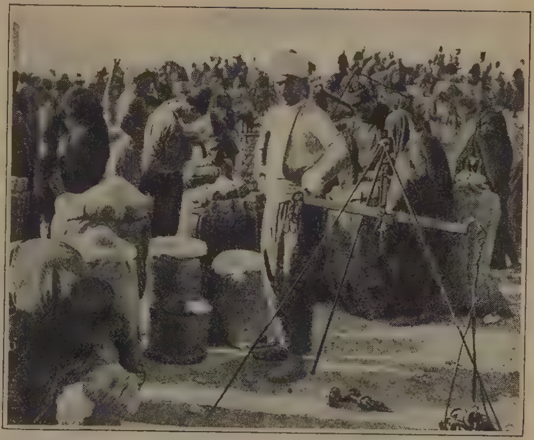


Figure 150. Market day in a Syrian town. The man nearest you has wheat and barley for sale. Notice the scales which he uses to weigh the grain.

2. French Lands in Asia

Compared with the British lands in Asia, the lands under French control in that continent are very small. Find them on the map on pages 148–149. Which one is in the Near East? Which one is in the Far East?

Syria. Syria is an Arab country which the League of Nations has given in charge to the French. Find this country on the map on pages 226–227 · (*L* 3–4). Judging from the map, what kinds of work do you think the Syrians do?

Most of Syria is rather dry, but along the Mediterranean coast there is a narrow strip of land where the yearly rainfall is over 20 inches. Most of the rain falls in winter, however, and the summers are hot and dry. Here, as in other borderlands of the Mediterranean, the people raise grapes, olives, and other fruits, and winter crops of barley and wheat. In certain parts of the country tobacco and cotton are grown. *See Figure 150.*

One of the most important kinds of work in Syria is the raising of silkworms and the preparation of raw silk for export. This is the work in which the French have given the Syrians the most help. Can you explain why?

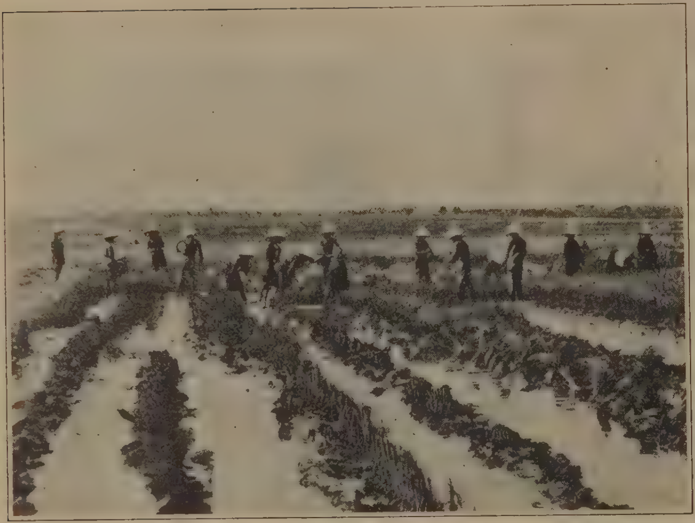


Figure 151. Native coolies, or laborers, working in a rice field on the delta of the Sonkoi River in French Indo-China. In what ways is this delta plain well suited to rice-growing?

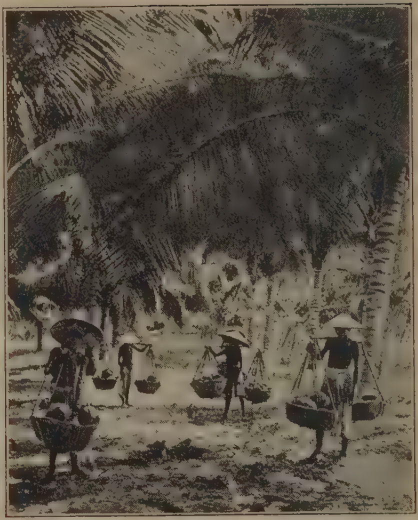


Figure 152. Coolies carrying coconuts gathered from the trees on a plantation in French Indo-China.

In the dry interior most of the people are nomads who wander about with their flocks of sheep, goats, and camels. Their life is like that of the Arabs whom you learned about in "Home Life in Far-away Lands."

On the map on pages 226–227 find Damascus and Beirut (*L 4*). Damascus is an old Arab trading town, with bazaars like those in Algiers and Tunis. Beirut is the capital and leading seaport of Syria.

French Indo-China. On the map of the Far East (p. 298) find French Indo-China (*B5*). Notice that this French colony shares with the neighboring country of Siam the lowland plain of the Mekong River. Find the delta plain of another river farther north in Indo-China. What does Figure 64 (p. 71) show about the rainfall in these plains? In what zone is French Indo-China? What kinds of work do you think the people do there?

French Indo-China is a monsoon land like India, and its plains will remind you of the plain of the lower Ganges. Like that plain, they are among the great rice-growing regions of the world. Rice is the principal food of the people, and it makes up nearly three fourths of all the exports. *See Figure 151.*

Other crops which are raised in various parts of French Indo-China are cotton, sugar, tea, coffee, pepper, and coconuts. The French have started rubber plantations, but as yet the production is small. From the forests on the mountain slopes come teakwood and bamboo for export. *See Figure 152.*

Since rice is by far the most important export product of the country, the export trade is chiefly with China, Japan, and the Dutch East Indies, neighboring lands crowded with millions of people whose principal food is rice. The leading import is cotton cloth, which the natives use for clothing.

The French officers in charge of the government of this colony make their headquarters at Hanoi, the capital, and at Saigon, the leading seaport. Besides the government officials there are a good many French and other Europeans who are interested in the development of tropical plantations.

The native people, who make up most of the population, belong to the Mongolian, or yellow, race, like the Chinese and the Japanese. Most of the settlements are along the rivers near the seacoast, and besides the people who live on the land there are many who live in boats on the rivers.

East of Indo-China the French hold a small area on the Chinese coast known as Kwangchow. This is a center for French trade with China.

French towns in India. On the map on pages 148–149 find the five towns in India which belong to the French. Taken together these towns with the small areas surrounding them cover less than 200 square miles. Small as these possessions are, they are important to the French as centers for trade with India.

Pacific islands. Like the British, the French own many small islands in the South Pacific Ocean. You learned on page 92 how easily the native people of these tropical islands make their living. The French islands are useful to the people of France in the same ways that the British islands are useful to the people of Great Britain.

A check. Check your knowledge of the lands which France owns or protects by naming the places described below:

1. An island in the Mediterranean Sea.
2. Three French possessions in northern Africa.
3. A large area of French lands lying mostly in the Sudan.
4. French lands bordering the coast of the Gulf of Guinea.
5. The French possession in Africa through which the equator passes.
6. The country in the Near East under the protection of France.
7. The French colony on the Strait of Bab-el-Mandeb.
8. A large island off the east coast of Africa.
9. The French colony in the Far East.
10. The French colony in South America.
11. The tiny country in the Pyrenees under the protection of France.

Giving reasons. Complete each of the following sentences by giving reasons:

1. Algeria, Tunisia, and Morocco are the most valuable of the French possessions because --.
2. A large section of the French lands in Africa is almost useless because ------------------.
3. Although Madagascar is more than twice as large as New Zealand, it is less valuable to France than New Zealand is to Great Britain because ------------------------------.
4. As a whole, the French possessions are less valuable than the British possessions because --.
5. The French want more European settlers in their possessions in northern Africa because --.

A picture test. Below is a list of pictures which a traveler took in the French possessions, and a list of the places where he took them. The number after each place tells how many pictures were taken there. Name the pictures taken in each place.

List of Pictures

Rice fields
A phosphate mine
Harvesting wheat
A field of peanuts
Date palms
A lead mine
An olive grove
A camel caravan
Vanilla beans
A cacao plantation
Stripping cork bark
Raising silkworms
A graphite mine
A rubber plantation
Vineyards
An artesian well
Cutting mahogany logs
Palm kernels

List of Places

1 Syria (1)
2 The Sahara (2)
3 French Sudan (1)
4 Madagascar (2)
5 French Indo-China (2)
6 The Guinea coast (3)
7 French possessions in northern Africa (7)

Map work. On an outline map of Africa color all the British possessions in red. Then color all the French possessions in purple. Keep this map and add to it as you study the possessions of other European countries in Africa.

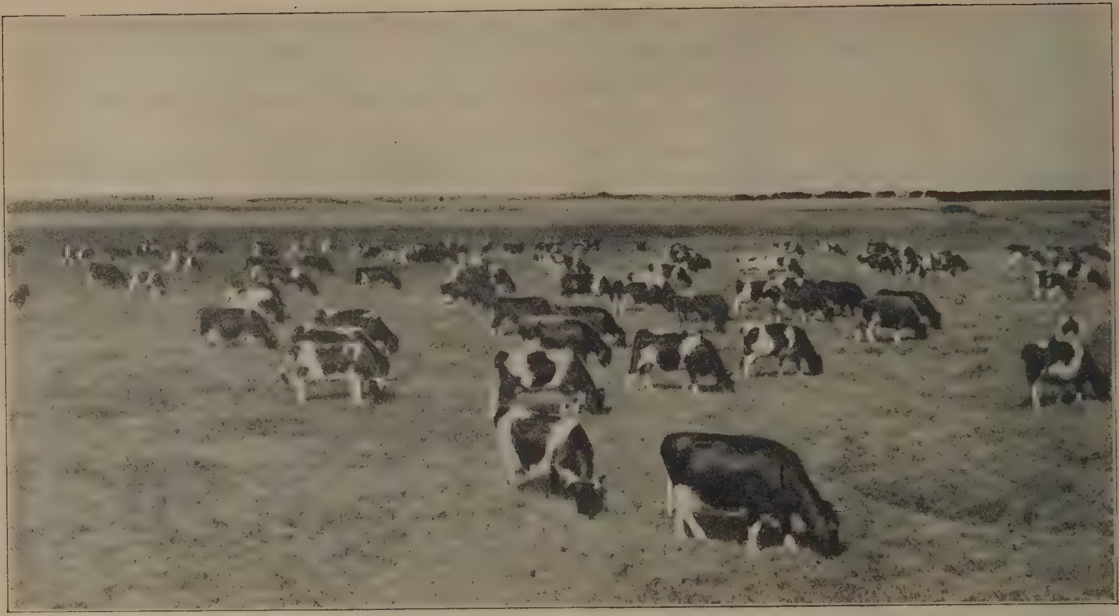


Figure 153. Dairy cows grazing on the island of Zealand, in Denmark. There are about a million and a half dairy cows in Denmark, and butter is by far the most valuable export of the country. What industrial country bordering the North Sea do you think probably provides a good market for butter from Denmark?

THE SMALL NORTH SEA COUNTRIES

I. BELGIUM, THE NETHERLANDS, AND DENMARK

Foreword. Bordering the North Sea, opposite Great Britain, are three small kingdoms — Belgium, the Netherlands, and Denmark. The Netherlands is often called Holland, but Holland is simply the name of one section of the country. The total area of these three countries is a little less than that of the state of Ohio, yet they have nearly three times as many people. One of the countries owes its prosperity chiefly to agriculture, the second chiefly to manufacturing, and the third to agriculture and commerce.

Find these three countries on the map on pages 22–23. From what you can learn of them from the map, write down their names in the order in which you think they are described above. Keep your list for checking when you finish studying this chapter.

Turn to the map on pages 148–149 and find the distant possessions of Belgium and the Netherlands. How do the possessions compare in size with the homelands? Which of the two countries has possessions in the Americas? What is the name of the largest of those possessions?

From Figure 168 on page 171 tell what large island belongs to Denmark. Do you think this is a valuable possession? Give a reason for your answer. Greenland

As you study about Belgium, the Netherlands, and Denmark, find answers to these questions:

1. How do so many people make a living in these small countries?

2. Of what use to them are their distant possessions?

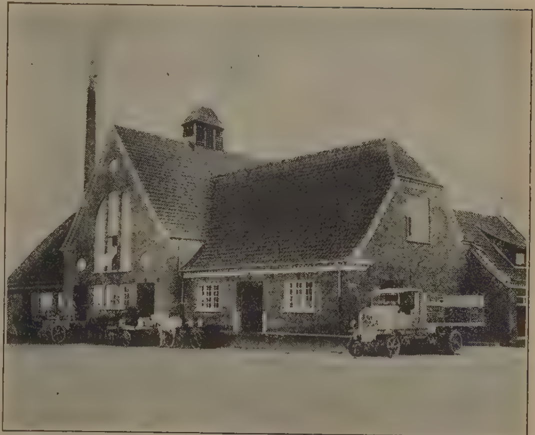
1. Farming and Fishing

In all three of these North Sea countries there are large numbers of farmers, and along the coast of the Netherlands and Denmark there are many people who carry on fishing. Can you suggest reasons for the importance of farming and fishing in these countries?

The land and the climate. The map shows that all of Denmark and the Netherlands and more than half of Belgium are in the Central Plains of Europe. Thus most of the surface is well suited to farming. The climate too is favorable, for the westerly winds from the Atlantic bring rain at all seasons.

Along the North Sea coast of these countries there is a narrow belt of sand dunes. Farther inland much of the land is covered with glacial soils which are not very fertile, but they can be made to produce good crops by the use of fertilizers. The richest soils are in the western part of the Netherlands, south of the Zuider Zee, for this region is the delta plain of the Rhine and the Meuse rivers.

The land of the Danes. The map shows that Denmark occupies the peninsula of Jutland and the islands between that peninsula and Sweden. It has no coal or oil, no metal ores, and no water power. Its soils are almost its only natural resource, and even those are rather poor. Yet Denmark is a prosperous country, for the people make the best possible use of their land.



From Ewing Galloway, N. Y.

Figure 155. A coöperative creamery in Denmark. All over the country there are creameries where cream purchased from the farmers is used to make butter.

Danish farmers and their work. One third of all the workers of Denmark are farmers, and another third are engaged in work connected in one way or another with the marketing of farm products. By using fertilizers and cultivating their land carefully the Danish farmers have turned three fourths of their country into valuable farm lands, and they have made Denmark famous for its dairying industry. *See Figures 153 and 154.*

On nearly every Danish farm you will see not only cows but pigs and poultry, and on many you will see beef cattle. Part of the cultivated land is used for food crops, — chiefly rye, wheat, potatoes, and sugar beets, — but even more for oats, barley, and other crops grown chiefly to feed the live stock. The products that bring in the most money are cream, eggs, and pigs. The pigs can be raised cheaply because they are fed partly on skimmed milk.

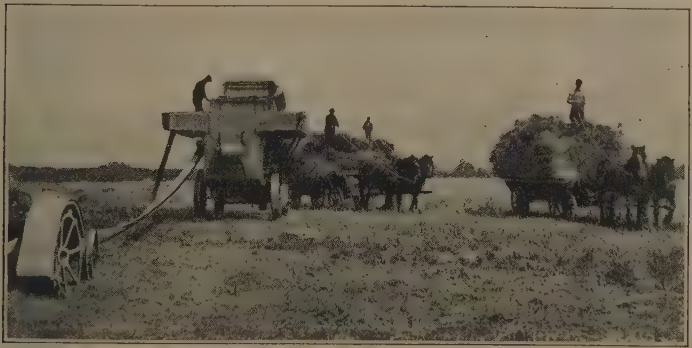
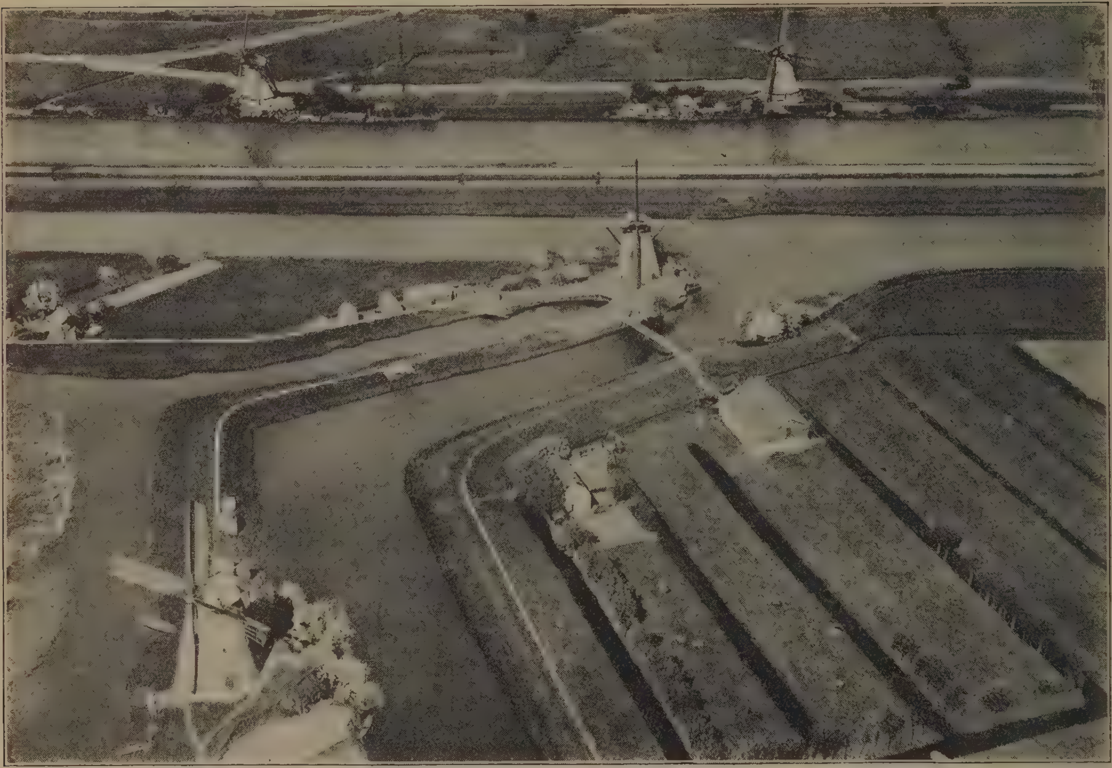


Figure 154. Threshing grain on a farm in Denmark. Danish farmers use modern machinery in their farm work. What reason can you suggest for the fact that they raise large quantities of grain?



Royal Dutch Airlines Photograph from OROC

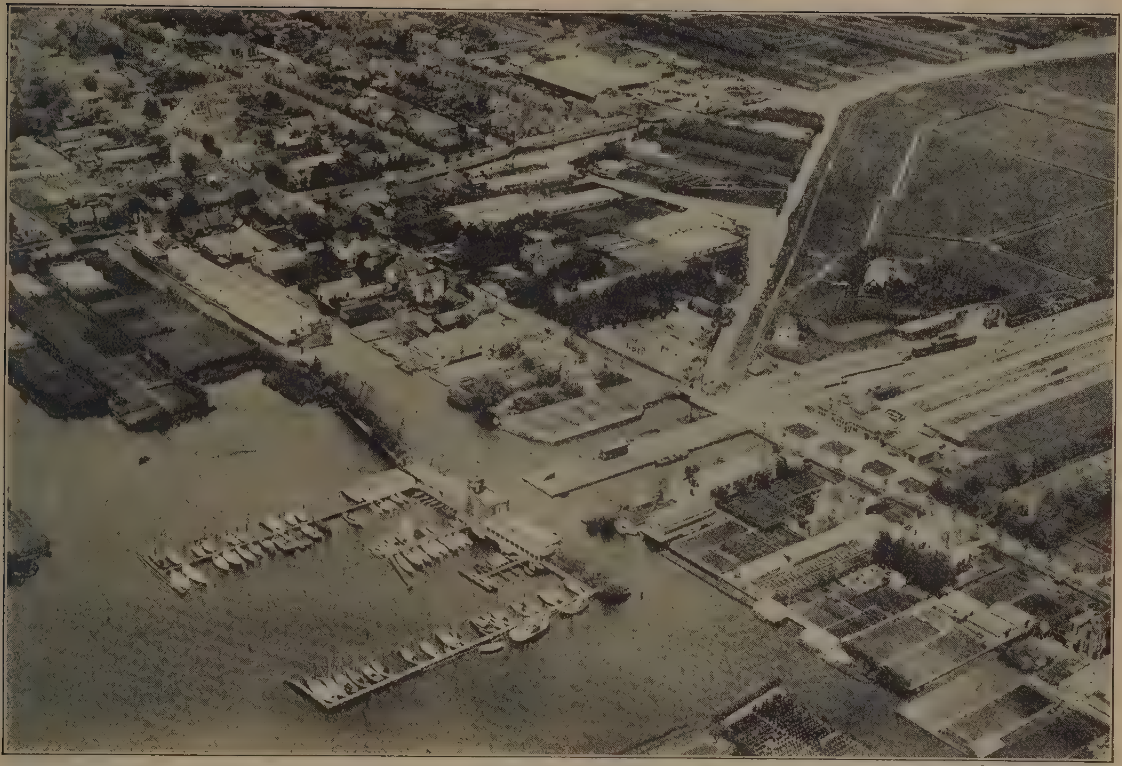
Figure 156. A glimpse of the Dutch polder land from an airplane. Notice the strips of cultivated land separated by ditches into which the water drains. The windmills are used to pump the water into canals which carry it to the sea. Pumps run by steam power and by electric power are also used for this purpose.

Working together. One of the chief reasons for the prosperity of the Danish farmers is that they coöperate, or work together, to market their products. Nearly every farmer belongs to one or more of the many hundreds of coöperative societies which own creameries, cheese factories, egg-packing plants, and bacon factories. He sells his products to the societies to which he belongs. The societies, in turn, prepare the products for use and carry on the business of marketing them at home and in other countries. *See Figure 155.*

By selling to their coöperative societies instead of trying to market their products separately, the Danish farmers are sure of getting good prices; and since Denmark is almost wholly an agricultural country, the prosperity of the farmers means the prosperity of the entire nation.

Many cities in England depend largely on Denmark for their butter, eggs, and bacon. In fact, about half of all the foodstuffs exported from Denmark go to Great Britain. What reasons can you give for this?

The Dutch polders. The best farm lands in the Netherlands are the polders on the great delta of the Rhine and the Meuse. When you were studying "Home Life in Far-away Lands," you learned that the polders are the low, flat lands which the Dutch have drained by building dikes around them and pumping the water out. You also learned that the larger canals, which carry away the water, are highways of transportation. *See Figure 156.*



Royal Dutch Airlines Photograph from OROC

Figure 157. Another view of the polder land from an airplane. This is a Dutch town near Amsterdam, where the people specialize in raising many kinds of flowering plants and flower bulbs. See if you can find some of the long, low hothouses in the picture. They are filled with blossoming plants all winter long.

The low, moist polders make rich pastures, and therefore the principal work of the polder farmers is dairying. Butter is exported to Germany and other neighboring countries, and Dutch cheeses find markets in distant lands as well as in those close by.

Some of the polder farmers have market gardens where they raise fresh vegetables for the people of the cities and for export to neighboring countries. Many of the market gardeners have hothouses so that they can raise vegetables in winter as well as in summer. This is profitable business, for fresh vegetables bring high prices in the winter.

If you visit the polder land in the spring, you will see acres and acres of beautiful flower gardens filled with tulips, hyacinths, and narcissi. These flowers are grown not for the blossoms but for the bulbs, which are sold to florists and seed merchants in many different parts of the world. *See Figures 157 and 158.*

Adding to the polder land. The higher land east of the polders has much poorer soil; but in spite of this it is used for raising rye and other grains and for pasturing cattle. But the Dutch want more of the rich polder land, and so they have started to drain part of the Zuider Zee. Find this inland sea on the map on pages 22–23 (*K 4*).

Across the entrance to the Zuider Zee the Dutch are building a great dike, or wall, to keep out the sea waters. When the dike is completed, they will pump enough water out

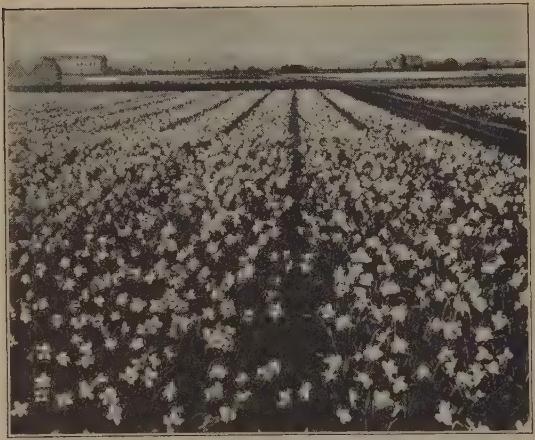


Figure 158. Acres of blossoming narcissi on a bulb farm in Holland. The blossoms are allowed to wither in the fields, and later the bulbs are taken up.

of the Zuider Zee to uncover more than half a million acres of its level bottom. This new land, reclaimed from the sea, will give the Dutch much additional polder land to use for farming.

Farming in Belgium. As you would expect, the best farm land of Belgium is in the lowland region. The farms are very small, but the farmers use the land intensively; that is, they make every acre produce as much as it possibly can. Mixed farming is the rule, and the leading crops are rye, wheat, potatoes, and sugar beets for food, and forage crops for live stock.

On the map on pages 22–23 find the place in the lowland of Belgium where flax is a special crop. This district is in the valley of the Lys River. What kind of manufacturing do you think is carried on in this valley?

Study the map again and see if you find any foodstuffs among the leading exports of Belgium. Do you know of any reason why the Belgians do not export foodstuffs, as the Dutch and the Danes do?

Dutch and Danish fishermen. Since the North Sea is one of the best fishing grounds in the world, many people along the coast of Denmark and the Netherlands make their living from the sea. The Dutch and Danish fishermen catch many kinds of fish, but herring, cod, and mackerel are the most important.

On the map on pages 22–23 find the canal which connects Amsterdam with the North Sea (*K 4*). At the entrance to this canal is the Dutch fishing port of Ymuiden, which will remind you of the fishing ports along the east coast of England and Scotland. It has a large fleet of trawlers which bring in great quantities of fresh fish from the North Sea. Express trains, waiting near the wharves, rush the fish to Amsterdam and to cities in Germany.

Fishing and seamanship. In the Netherlands, as in England, fishing long ago led many men to follow the sea; and the Dutch, like the English, very early became explorers and settlers of distant lands. Today the Dutch have a large fleet of merchant ships, and they carry on trade in all parts of the world.

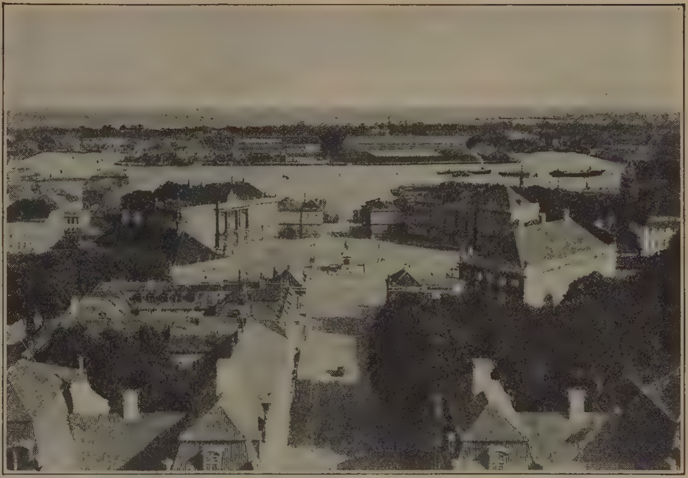
Proving statements. What facts can you give to prove each of the following statements?

1. The Danes are skillful, businesslike farmers.
2. The Dutch are more fortunate in their soils than the Danes.
3. The Dutch wish to add to their better farming lands.
4. The Belgians need all the food they can produce.

Special credit work. Find out what the Dutch have had to do to make the low polder land safe from river floods, and tell your class about it.

2. SEAPORTS AND MANUFACTURING CITIES

Turn to the map on pages 22–23 and find the chief seaports of Belgium, the Netherlands, and Denmark. Which country has two large ports? What port is at the mouth of the Rhine? Judging from the exports, which one of the three countries do you think carries on the most manufacturing?



By Ewing Galloway, N. Y.

Figure 159. A view of Copenhagen looking east toward Sweden and showing part of the harbor. The large building at the left of the center of the picture is the palace of the king of Denmark.

The capital of Denmark. On the map find Copenhagen, the capital and chief seaport of Denmark (*O3*). Notice that it has an excellent location for trade with the neighboring countries. The Danish name for this city is Köbenhavn, which means "Merchants' Harbor." Ships can reach it easily from the Baltic Sea on the east, and by two routes from the North Sea on the west, one around the northern end of Jutland, and the other through the Kiel Canal. Find this canal on the map (*M3*).

Copenhagen can also be reached by train from all parts of Denmark, from Sweden, and from Germany. Through train service is made possible by ferries which carry freight and passenger cars across the bodies of water which separate the Danish islands from one another and from Jutland, and across those which separate Denmark from Sweden and Germany.

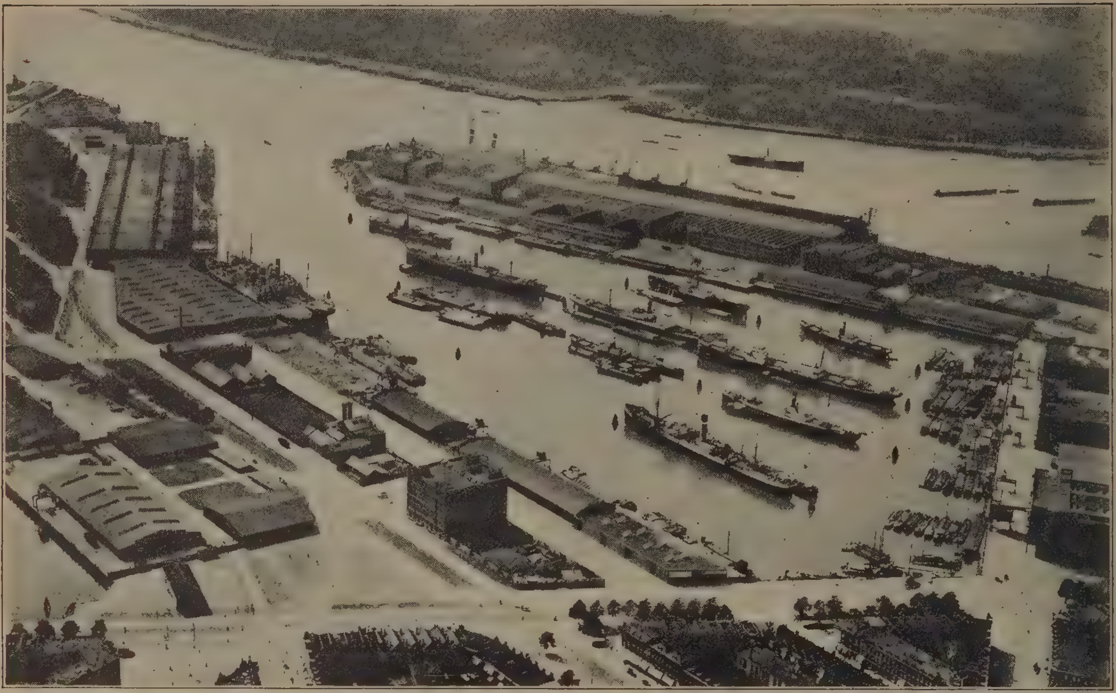
Because of its location, its shipping, and its railroad connections, Copenhagen is the largest city and the leading business center of Denmark. It also carries on some manufacturing, especially shipbuilding, but it is much more important as a commercial center than as an industrial center. *See Figure 159.*

Manufacturing and trade in Denmark. The lack of coal, oil, and water power in Denmark is a great handicap to manufacturing, and the principal industries are those which have to do with the preparation of farm products for use, such as the making of butter and cheese, meat-packing, and sugar-refining.

The trade of Denmark shows clearly how largely the people depend on agriculture. The leading exports, as you know, are foodstuffs from the farms. Among the imports are millions of dollars' worth of oil cake and grain for cattle feed, and large quantities of fertilizers. The rest of the imports show Denmark's lack of fuel and its small industrial development. Turn to the map on pages 22–23 and prove that this is true.

Rotterdam — gateway for the Rhine Valley. On the map on pages 22–23 find Rotterdam (*K 5*). This great seaport is on the Meuse River (or the Maas, as the Dutch call it), a short distance below the point where that river is joined by one of the distributaries of the Rhine. On the map on pages 144–145 trace the Rhine upstream from its mouth to Basel, in Switzerland.

The Rhine is navigable for barges and river steamers all the way from Basel to Rotterdam, and its valley is an important railroad route. The Rhine Valley is also a rich agricultural region, and in and near it in western Germany are many great industrial centers. Much of the commercial importance of the Netherlands is due to the fact that it controls the mouth of the Rhine, and Rotterdam has become one of the greatest seaports of Europe because it is the ocean gateway for the Rhine Valley.



Royal Dutch Airlines Photograph from OROC

Figure 160. An airplane view of one of the many docks, or deep-water basins, for ships along the Maas at Rotterdam. Notice the many ocean freighters and river barges, and the long storage warehouses which border the dock. The ship in the distance, with two smokestacks, is a large transatlantic passenger liner.

Large ocean ships come to Rotterdam through a deep waterway which the Dutch have dug from the North Sea, and they load and unload in huge docks on both sides of the river. Many of the bulky imports, such as grain, oil, and coal, are loaded on barges at Rotterdam and sent upstream to the industrial centers of the Rhine Valley in Germany. *See Figure 160.*

Of course Rotterdam imports and exports goods for the Dutch people; but when you think of this great seaport, remember that it handles trade not only for the Netherlands but also for the neighboring part of Germany.

Amsterdam. The map shows that Amsterdam is farther north, near the Zuider Zee (*K* 4). This is the largest city of the Netherlands, and the people have made it a great seaport by digging a canal to connect it with the North Sea. Ships come to it from all over the world, and it is the port through which much of the Dutch trade with the East Indies is carried on.

Amsterdam and Rotterdam are connected not only by railroads but also by a canal, and large quantities of goods are carried back and forth between them by barges. In both cities there are many small canals for the transportation of goods in small barges. *See Figure 161.*

The capital of the Netherlands. The Hague ('s Gravenhage), capital city of the Netherlands, is nearer the seacoast than either Rotterdam or Amsterdam, but it is not a seaport. It is a very attractive city with many parks and boulevards and many beautiful public buildings. Among them is the Palace of Peace where the Hague Tribunal meets to settle difficulties between the people of different nations in a friendly way.

The trade of the Netherlands. The map shows that the Dutch people import a great variety of goods. Among them foodstuffs and raw materials from the Dutch East Indies and other tropical lands hold a high place. Wheat and flour also are important; for most of the Dutch polders are too moist for wheat, and most of the soils of the drier lands farther inland are too poor. The imports of coal and oil suggest a shortage of fuel in the Netherlands, and the high rank of iron and steel goods among the imports indicates that there are no great iron-and-steel manufacturing centers in the country.

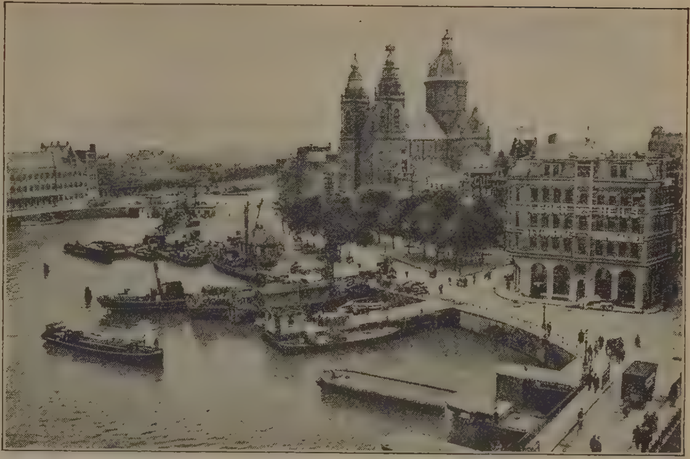


Figure 161. A view in Amsterdam. Amsterdam has many canals which serve as "water streets" on which bulky goods are transported in small boats and barges. In this picture you are looking down one of the larger canals toward the railroad station.

The map shows that the principal exports of the Netherlands are foodstuffs. Notice, however, that cotton goods hold high rank among the exports. To what part of the world do they go?

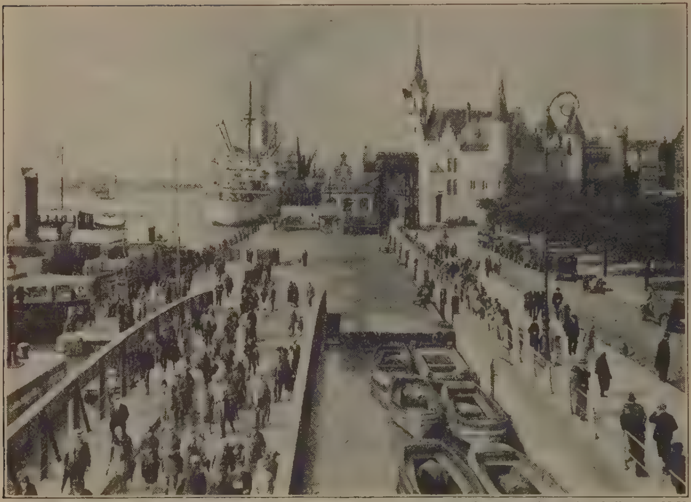
Manufacturing in the Netherlands. The Dutch have but one small coal field in their country, and they have no iron or other metal ores. Some of their leading manufactures, such as butter and cheese, depend on raw materials produced at home, but more of them are connected in one way or another with foreign trade.

As you would expect, Rotterdam and Amsterdam are the leading manufacturing cities, and both are shipbuilding centers. Can you explain why? Imports of tropical products have made Amsterdam a center for sugar-refining, cigar-making, coffee-roasting, and the manufacture of cocoa and chocolate. Amsterdam is also well known for the cutting of diamonds. Where do the rough diamonds come from?

Another very important industry in the Netherlands is the pressing of oil-seeds and the refining of vegetable oils. How is this work connected with the import and export trade? As you would expect, the Dutch people also manufacture goods to supply the needs of the people in their tropical possessions. Chief among these is cotton cloth. Can you explain why?

Do you see how important commerce is to the Dutch people? Long ago their seamanship made them traders and won them the rich East Indies. Their location at the mouth of the Rhine also has increased their commerce greatly; and commerce, in turn, has played a large part in the growth of manufacturing.

Antwerp and its trade. On the map on pages 22–23 find Antwerp (Anvers), the seaport of Belgium (*K 5*). This city is located not far from the mouth of the Scheldt River and is connected with all parts of Belgium by railroads and canals. Many of its imports go to western Germany, but it is a somewhat less important gateway for that region than is Rotterdam. Like Amsterdam, Antwerp is a shipbuilding center, and is well known for the cutting of diamonds. *See Figure 162.*



Photograph by Ewing Galloway, N.Y.

Figure 162. A glimpse of the water front on the Scheldt River at Antwerp, showing the old castle known as The Steen. The lower course of the Scheldt has been deepened by dredging so that large ocean ships may come upstream to Antwerp.

How many things do you find among the imports and exports of Antwerp to prove that Belgium is a manufacturing country? Belgian trade is much like British trade; for the leading imports are foodstuffs and raw materials, and the leading exports are manufactured goods. Do you know why Belgium is a greater manufacturing country than the Netherlands?

The Belgian coal field and its manufactures. Turn to the map again and you will see that the coal field of northern France continues eastward along the margin of the upland region of Belgium. The coal mined here has led to the growth of a great iron-and-steel industry. At Liége and other cities along the coal field there are blast furnaces, steel mills, and many factories for the manufacture of iron and steel products. *See Figure 163.*

A little iron ore is mined near the coal field, but most of the ore comes from the neighboring duchy of Luxembourg. Find Luxembourg on the map (*K–L 6*), and you will see that its iron field is a northern extension of the Lorraine field of France. Luxembourg has an independent government, but in its business affairs it is closely associated with Belgium.

Other important industries of the Belgian coal field are the manufacture of glass and chemicals and the refining of zinc. Some of the zinc is mined close by, but most of it is imported.

East of Liége, in the upland region, is a district where woolen goods have been manufactured for over five hundred years. The upland has always been a sheep-raising region, but today it supplies only a small part of the raw material needed by the mills. Most of the wool now comes from Argentina.

Textile-manufacturing in Flanders. The western part of the plain of Belgium is called Flanders, and for hundreds of years it has been a famous textile-manufacturing region. Flax grown in the valley of the Lys long ago led to the manufacturing of linen goods, but the industry has now outgrown the home supply of raw material. Later, cotton-manufacturing was begun in this region. Today all the larger cities have linen mills or cotton mills, or both. The largest of the textile centers is the old city of Ghent. Much of the flax and most of the cotton for its mills come by barge from Antwerp.

The capital of Belgium. On the map on pages 22–23 find Brussels (Bruxelles), the capital and largest city of Belgium (*K 5*). Its central location in the country has made Brussels an important railroad and business center. It is also a beautiful city, with many parks and playgrounds and fine public buildings. Its chief manufactures are laces, rugs, and carpets, and it is a center for the sale of lace which Belgian women make by hand.

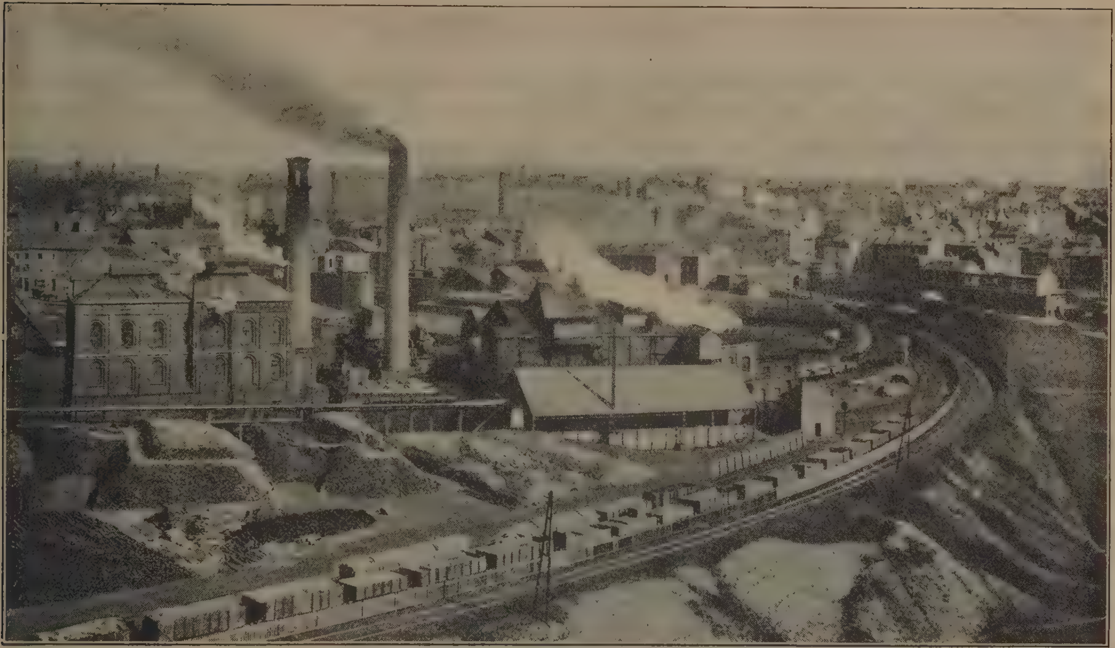


Photo Nels, Brussels

Figure 163. Charleroi, the most important coal-mining center in Belgium. Charleroi is one of the many mining and industrial cities located on the coal field which extends from northern France across Belgium. Besides its coal mines, the city has iron-and-steel plants, glass factories, and many other kinds of manufacturing plants.

A check. 1. Look at the list which you were asked to make at the beginning of this chapter and see if it reads as follows: Denmark, Belgium, the Netherlands. If it does, it is correct.

2. Complete the following sentences by giving reasons.

a. Farming is the most important kind of work in Denmark because ________________________.

b. Manufacturing is more important in Belgium than in Denmark or the Netherlands because ________________________.

c. The Netherlands is a greater commercial country than Denmark or Belgium because ___
____.

Explaining differences. In the following sentences certain differences between Belgium, the Netherlands, and Denmark are stated. Give the principal reasons for the differences.

1. Denmark has about 207 people to each square mile, while Belgium has 680.

2. The Netherlands is not quite so densely populated as Belgium.

3. The Belgians need all the food they can produce, while the Danes have large quantities of food for export.

4. The Dutch have a much larger fleet of merchant ships than the Danes or the Belgians.

5. In proportion to the population the Danes import more manufactured goods than the Dutch or the Belgians.

6. There are many more miners among the Belgians than among the Danes or the Dutch.

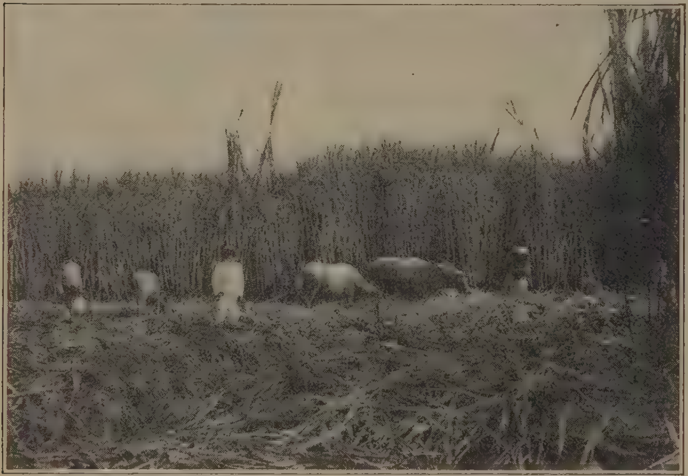
7. The Belgians import greater quantities of cotton and wool than the Dutch.

Naming ports. Name the port in Belgium, the Netherlands, or Denmark where you would be most likely to see each ship described below, and explain why.

A ship (1) unloading wool from Argentina; (2) loading butter and bacon for England; (3) unloading goods bound for western Germany; (4) loading iron and steel goods; (5) unloading oil cake and fertilizers; (6) loading vegetable oils; (7) unloading sugar and cacao.

II. COLONIAL POSSESSIONS

Foreword. You have learned that the Dutch carry on much trade with their possessions in the East Indies. The trade of the Belgians with their colony in Africa is very much less, and Danish trade with Greenland is exceedingly small. Can you suggest any reasons for these great differences in trade?



Courtesy of Colonial Institute, Amsterdam

Figure 164. Harvesting sugar cane in Java. The cane stalks are taken to factories, where they are crushed to squeeze out the juice from which the raw sugar is obtained by boiling and evaporation. There are nearly 200 sugar factories in the Dutch East Indies.

THE DUTCH EAST INDIES

Tropical islands. The Dutch East Indies include the parts of Borneo and New Guinea which belong to the Netherlands, the large islands of Sumatra, Java, and Celebes, and many smaller islands. Taken together, the Dutch East Indies are more than fifty times as large as the Netherlands, and they have more than seven times as many people.

These islands are in the heart of the tropics, and are hot and rainy the year round. Many parts of the islands are mountainous and covered with tropical forests. By far the most densely populated island is Java, which has nearly 700 people to the square mile.

Plantation products. The East Indies are very valuable possessions because they produce tropical products needed in the temperate countries of Europe and America. The Dutch and other groups of white people have established plantations of rubber, sugar cane, coffee, tea, tobacco, and coconuts on the islands, and large quantities of these products are exported, chiefly to Europe and the United States. *See Figures 164 and 165.*

The Dutch East Indies stand next to British Malaya in the production of rubber, furnishing about a third of the world's supply. Java stands next to Cuba among the countries which produce cane sugar, and it exports more coffee than any other part of the Old World. The native people of the East Indies are intelligent, and they make excellent plantation workers. Many thousands of them work on the plantations, where they live in huts provided by the owners.

The chief crop which the natives raise for their own use is rice, for this grain is their principal food. In Java, where the population is so dense, additional supplies of rice are imported from the neighboring countries of southeastern Asia.

Mineral wealth. Borneo, Sumatra, and Java have valuable oil fields. In all three islands there are petroleum refineries, and gasoline, kerosene, and fuel oil are exported to the Netherlands, Great Britain, and other European countries, and to China and Japan. The islands of Banka and Billiton, near Sumatra, have tin mines which make the Dutch East Indies second only to British Malaya in the production of this metal.

Batavia and its trade. On the map on page 298 find Batavia (*B 7*). On what island is it? Batavia is the largest city and chief seaport of the Dutch East Indies. It is also the capital, where the Dutch officials who have charge of the government make their headquarters.

Batavia serves as a collecting and distributing center for the Dutch East Indies, just as Manila serves the Philippines. Besides the large ocean ships in its harbor, you will see the small boats which bring in products of the other islands for export and carry back supplies for the people. Turn to the map on page 298 and prove that the trade of these islands is like that of other tropical lands, — an exchange of foodstuffs and raw materials for manufactured goods.

The trade of the Dutch East Indies is chiefly with the Netherlands and other European countries, and with the United States. The leading export to our country is rubber, for we use more rubber than any other nation in the world.

The Netherlands supplies many of the manufactured goods used in the islands, especially cotton goods. Great Britain also has a large share in the import trade of the Dutch East Indies, for the British are better able to supply machinery and other manufactures of iron and steel than are the Dutch. Explain why.

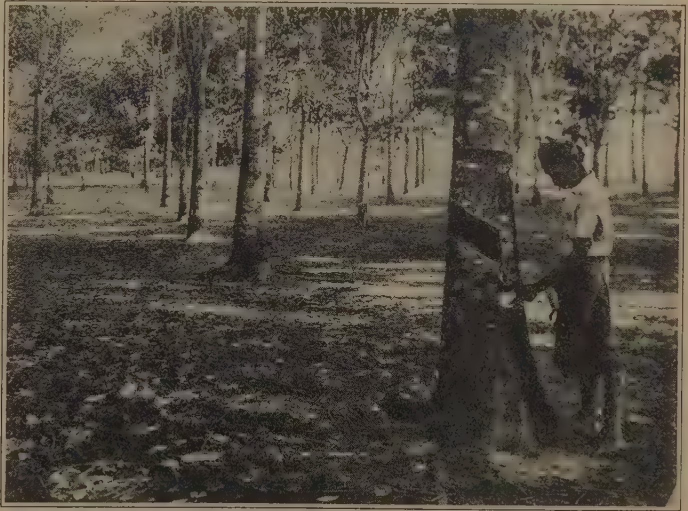
BELGIAN CONGO

Another tropical land. Turn to the map of Africa on page 50 and find Belgian Congo. What great river basin lies wholly in this possession of the Belgian people? How can you prove by the map that this basin is another tropical land?

The Congo Basin is hot and rainy, and much of it is covered with thick, tropical forests. Railroads are so hard to build in such a region that the Congo River and its tributaries are the chief highways of travel and transportation. Ocean ships go up the Congo as far as the town of Matadi, but they cannot go farther upstream on account of rapids in the river. From Matadi to Leopoldville, the capital, a railroad has been built. From Leopoldville the Congo is navigable for 980 miles to Stanleyville, where there are more rapids and another railroad.

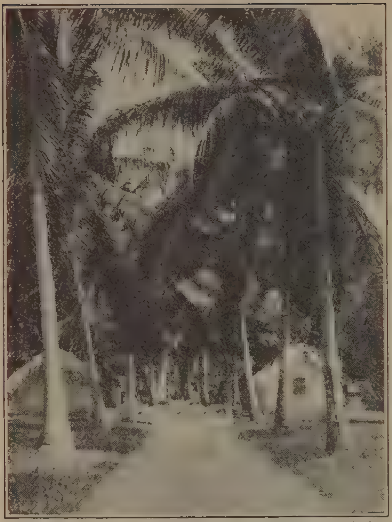
The native people. The natives of Belgian Congo are negroes who live in little villages along the rivers and get their food by raising a few vegetables and fruits, and by fishing. They also gather the fruit of the oil palms which grow wild in the forests, and sell the kernels to European traders.

Handicaps to plantation farming. The Belgians have found it difficult to establish plantations in the Congo basin because it is hard to clear land in the tropical forests and it is almost impossible to get the natives to



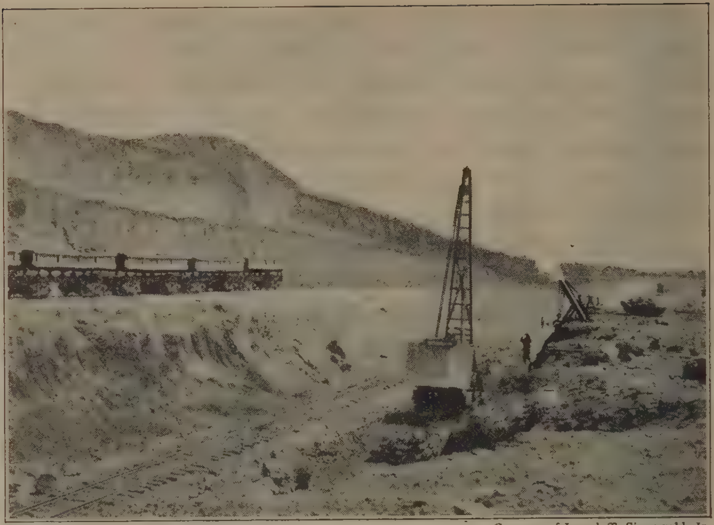
© The United States Rubber Company

Figure 165. A laborer on a rubber plantation in Sumatra fastening a cup to a rubber tree to catch the latex. This plantation belongs to a great rubber-manufacturing company of the United States.



Courtesy of United Christian Missionary Society

Figure 166. A street in a village in Belgian Congo, showing the houses of some of the overseers of a plantation.



Courtesy of Joseph T. Singewald, Jr.

Figure 167. A copper mine in the southern part of Belgian Congo. The copper here is mined in open pits by means of steam shovels. Belgian Congo ranks high among the copper-producing countries of the world.

work steadily. Their needs are so few that they care very little about earning money, and they prefer the easy life in their villages.

At present the most important plantations are those where oil palms are grown and the kernels crushed to extract the oil. Palm kernels gathered from the wild trees by the natives and palm oil from the plantations are valuable exports. *See Figure 166.*

Congo mines. From the map on page 50 name the mineral products of Belgian Congo. The leading mining district is the one in the south, and the copper mined there is the most valuable export of the country. Gold and diamonds also are exports of some importance. *See Figure 167.*

The trade of Belgian Congo. Although small quantities of many different products are exported from Belgian Congo, copper, palm oil, and palm kernels are by far the most valuable. Among the imports cotton goods hold a high place. Can you explain why? About half the trade is with Belgium. Our own country is a good customer for palm oil, and it supplies some of the imports.

Looking forward. Belgian Congo is much larger than the Dutch East Indies; it is not yet crowded with people; its mineral wealth is great; and it can be made to produce large quantities of plantation products, such as rubber, cacao, and cotton. Its development has only just begun, and in time it may prove as valuable to the Belgians as the East Indies are to the Dutch.

GREENLAND AND THE FAROE ISLANDS

The largest island. If we except the island continent of Australia, Greenland is the largest island in the world. It is also an almost useless island; for nearly all of it is north of the arctic circle, and most of it is covered with ice and snow which never melt away.

A cold, frozen land. The interior of Greenland is a vast plateau of ice. At places the surface is 9000 feet above the sea, and the ice is probably thousands of feet thick. This great ice cap is like those which once covered the northern parts of North America and Europe. The ice moves slowly outward from the center of the island, and at places where it reaches the sea it breaks off in huge blocks, forming icebergs.

Off the east coast of Greenland there is a current of water from the Arctic Ocean which makes the climate of that coast so cold that no one can live there. On the west coast there is a narrow belt of tundra which is covered with green grass during the short summer. Perhaps this explains why Eric the Red, the Icelander who discovered the island, called it Greenland.

The people of Greenland. There are only a few thousand people in this cold, frozen island, and nearly all of them are Eskimos. They live along the west coast and get their living by fishing and by hunting seals, walruses, blue foxes, and other animals. The few Danes who live among them are traders and the officials who carry on the business of the government.

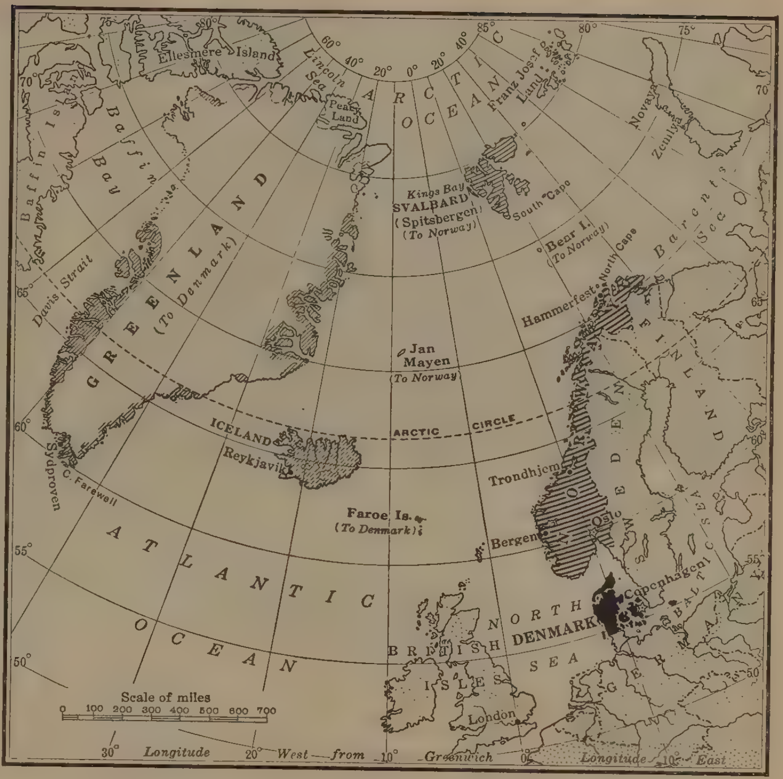

Ellesmere Island
Lincoln Sea
Peary Land
ARCTIC OCEAN
Franz Josef Land
Novaya Zemlya
Baffin Island
Baffin Bay
Davis Strait
GREENLAND (To Denmark)
Kings Bay
SVALBARD (Spitsbergen) (To Norway)
South Cape
Bear I. (To Norway)
North Cape
Barents Sea
Hammerfest
Jan Mayen (To Norway)
ARCTIC CIRCLE
ICELAND
Reykjavik
Sydproven
C. Farewell
Trondhjem
FINLAND
NORWAY
SWEDEN
Faroe Is. (To Denmark)
Bergen
Oslo
Copenhagen
BALTIC SEA
ATLANTIC OCEAN
NORTH SEA
DENMARK
BRITISH ISLES
London
GERMANY
Scale of miles
0 100 200 300 400 500 600 700
30° Longitude 20° West from 10° Greenwich 0° Longitude 10° East
75° 80° 85° 70° 65° 60° 55° 50° 40° 20° 0°

Figure 168. Denmark and Norway and their possessions.

In the summer, ships from Denmark carry supplies to the Greenlanders and take back a few furs and small quantities of fish. But the people on the island are so few that trade between the colony and the mother country amounts to very little.

The Faroe Islands. Small as these islands are, they have more people than Greenland, and they are of greater value to Denmark. Some of the people raise sheep, and wool and mutton are exported. Most of the people, however, are fishermen, and salted codfish and cod-liver oil are the leading exports of the islands.

ICELAND

Relations with Denmark. For many years Iceland was a possession of Denmark, but in 1918 the Danes gave the Icelanders their independence. The two countries are still closely associated, however; for they have a joint committee which studies the problems of both countries, and the Icelanders recognize the Danish king as their king.

The island and its people. Iceland is a mountainous island close to the arctic circle. Because of its location and the height of its mountains, much of the island is covered with ice and snow, and there are almost no trees. Many of the higher mountain peaks are volcanoes, and the island also has geysers and hot springs. Nearly all the people live in the small lowland regions in the southwest.

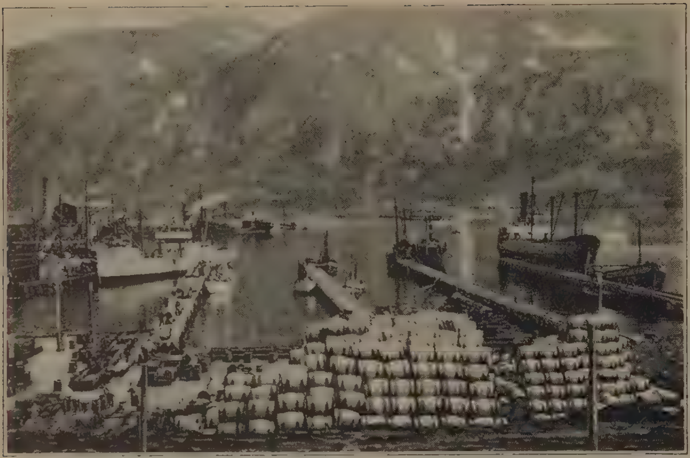


Figure 169. A cod-fishing station on the mountainous coast of Iceland, where large quantities of cod are salted and dried for export. The barrels in the picture are filled with salted codfish.

Iceland is too cold for much agriculture, but the people raise large numbers of sheep. The waters surrounding the island are rich fishing grounds, especially for cod, and therefore many of the Icelanders are fishermen. *See Figure 169.*

The largest town of Iceland is Reykjavik, the capital and seaport. The leading exports of Reykjavik are fish and wool, and the leading imports are lumber, foodstuffs, fuels, and manufactured goods. Most of the trade is with Denmark and Great Britain. Can you think why?

Some things to explain. Explain why

1. The East Indies are possessions which any European country would be glad to own.
2. At present Belgian Congo is less valuable to the Belgians than the East Indies are to the Dutch.
3. Belgian Congo will probably become a more valuable possession in the future.
4. Greenland is of very little value to the Danes.
5. Belgium and the Netherlands export large quantities of cotton goods to their colonies.

Map work. Color Belgian Congo on the map of Africa which you are making.

Finding reminders. 1. Name at least one export product of the Dutch East Indies which reminds you of each country listed below:

Cuba	Ceylon
Brazil	Porto Rico
Mexico	British Malaya

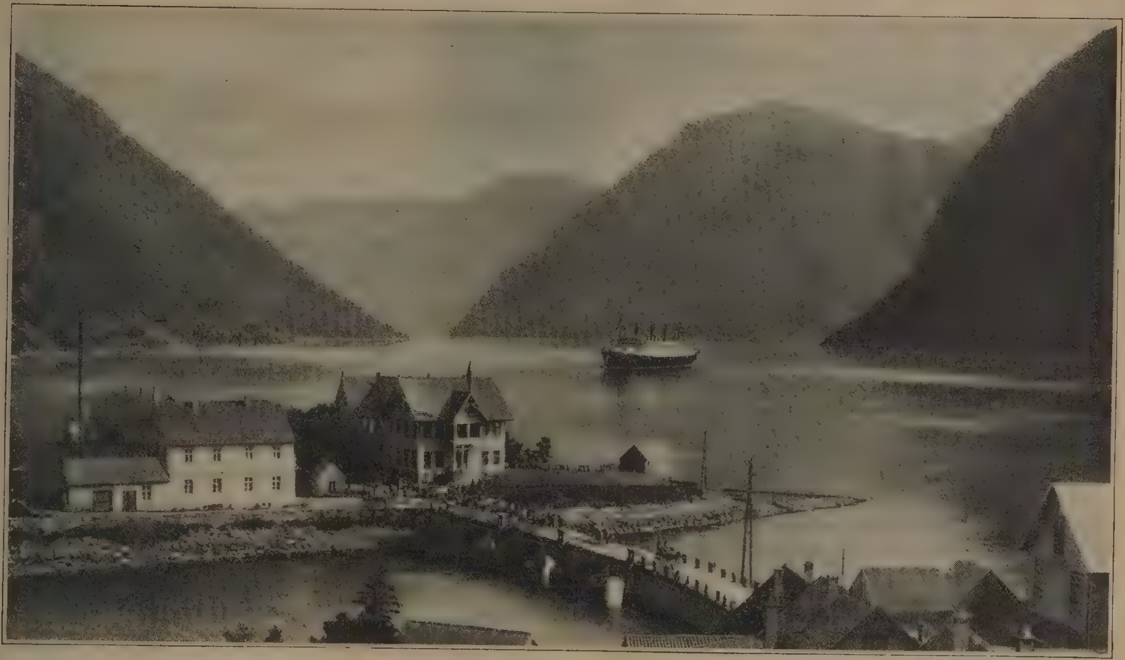
2. Name a river basin in South America of which the Congo Basin reminds you. Why can ocean ships go much farther upstream on the principal river of that basin than they can go on the Congo River?

A combination test. In each sentence you are to choose the correct word or phrase from those in parentheses, and then complete the sentence by giving reasons.

1. Much of the polder land in the Netherlands is used for (fruit-growing) (dairying) (sheep-raising) because ____________________.
2. Much of the farm land in Denmark is used for (forage crops) (orchards) (market gardens) because ________________________.
3. The abundant (zinc) (coal) (iron ore) in Belgium is of great value to the people because ___________________________________.
4. The Dutch and the Danes carry on much (lumbering) (mining) (fishing) because ______ ____.
5. The seaport of greatest importance in the small North Sea countries is (Copenhagen) (Rotterdam) (Antwerp) because ____________.
6. The principal crop raised by the natives of the Dutch East Indies for their own use is (rice) (sugar) (coffee) because _____________.

Can you name these cities? Name each city described below:

1. The capital of Belgium. [illegible]
2. The chief seaport of Belgium. Antwerp
3. The capital and chief seaport of Denmark. Copenhagen
4. The second most important port in the Netherlands. Rotterdam
5. The capital of the Netherlands. The Hague
6. The capital and chief seaport of the Dutch East Indies. [illegible]



De Cou from Ewing Galloway, N. Y.

Figure 170. One of the beautiful fiords on the western coast of Norway. Notice how steeply the mountains rise from the water. The fiords are narrow, but they are so deep that large ships such as the one in the picture can sail far inland on them. Where in the Americas could you see coasts somewhat like this one?

SCANDINAVIA AND THE BALTIC SEA COUNTRIES

I. NORWAY AND SWEDEN

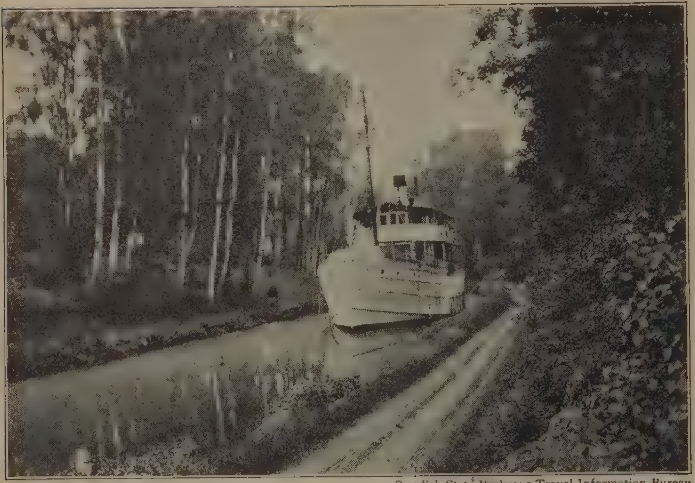
Foreword. The two countries which occupy the Scandinavian Peninsula of northwestern Europe are the kingdoms of Norway and Sweden. Find these countries on the map on pages 144–145. How do they compare in size with Belgium, the Netherlands, and Denmark?

Although the two Scandinavian countries are more than seven times as large as the three small North Sea countries, they have less than half as many people. Sweden has only 38 people to the square mile, and Norway only 23. Yet, in spite of the sparse population, several thousand people leave Norway and Sweden each year to make new homes in the United States. Our north-central states, especially, have large numbers of people of Swedish and Norwegian descent.

All these facts suggest that Norway and Sweden cannot support so many people as the countries farther south in Europe. Do you know why? Watch for the reasons as you study this chapter.

Map work. Before you read further, turn to page 177 and work out the map studies in Group I there.

The mountains of Scandinavia. The mountains which make up a large part of the Scandinavian Peninsula are very old. For long ages streams and glaciers have been wearing down their summits and deepening their val-



Swedish State Railways Travel Information Bureau

Figure 171. A boat passing through the Göta Canal. The trip across southern Sweden by the river, lake, and canal route takes two and a half days. The boats carry passengers and small freight.

leys. The snow fields and glaciers which you can see in the Scandinavian highlands today are reminders of the great ice cap which formed there long ago and spread over the northwestern part of Europe.

The fiord coast of Norway. Along the western coast of Norway the mountains rise steeply from the sea. Long ago this coast sank, and the sea entered the lower parts of the river valleys. Many of the valleys were steep-walled canyons, and today they form deep, winding fiords which lead far into the land. *See Figure 170.*

The coast is fringed with thousands of rocky islands, and between the islands and the coast there is a deep "inside passage" for ships, like the one along the coast of southeastern Alaska. This waterway is the principal highway of travel and transportation between the cities and towns along the coast, for there is no railroad connecting them.

Thousands of tourists visit western Norway every summer, for the scenery along the coast is beautiful. Among the sights which they enjoy are the waterfalls which tumble down the steep, rocky walls of the fiords.

A "land of the midnight sun." Many of the tourists go to North Cape to see the midnight sun. Find North Cape on the map on page 176 (*H 1*). In that latitude the sun remains above the horizon continually for nearly three months during the summer. Day after day it appears to swing around the earth, rising highest in the southern part of the sky at noon, and sinking lowest in the northern part of the sky at midnight; but it does not set.

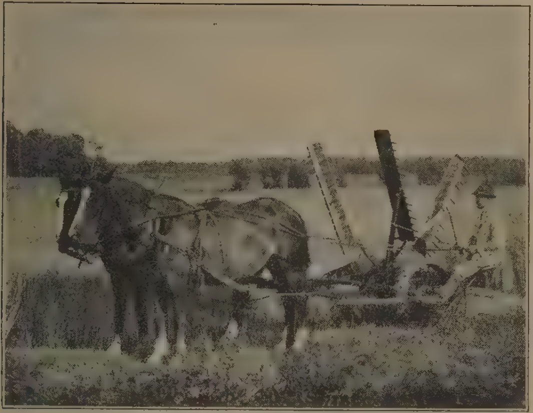
The length of time during which the sun does not set varies from one day on the arctic circle to six months at the north pole. In the winter there is a period of equal length during which the sun does not rise. This period is called the "winter night."

The lowlands of Scandinavia. Turn to the map on page 176 and notice how little of the lowland region of Scandinavia is in Norway. What does that suggest about the importance of farming in Norway compared with Sweden?

The Scandinavian lowlands have a rolling surface with many small hills. Some of the hills are of hard rock, and others are made up of loose rock materials left by the great ice sheet of long ago. There are also many lakes which occupy hollows left when the ice melted away.

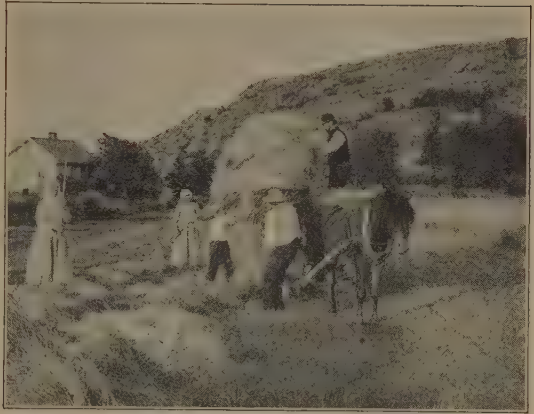
Use the map on page 176 to show how you might travel by boat from Göteborg (*E 4*) across southern Sweden to the Baltic Sea. Through what two lakes should you pass? through what canal? This inland waterway is too shallow for large ships, but it is used by boats such as you see in Figure 171.

Some differences in climate. Because of their latitude, the Scandinavian countries have a cool climate; but they are not so bitterly cold in winter as the part of Europe



Swedish State Railways Travel Information Bureau

Figure 172. Harvesting grain in southern Sweden. In this part of Scandinavia the surface is level enough to permit the farmers to use farming machinery.



Photograph by Wilse

Figure 173. Haying on the west coast of Norway. Here the land is so mountainous and the patches of level ground so small that farm work is done by hand.

farther east. That is because the peninsula is so nearly surrounded by water. The western coast of Norway is warmed by the westerly winds that blow over the Gulf Stream Drift, and its harbors do not freeze over in the winter. This coast is also very rainy. Explain why.

Sweden has colder winters and warmer summers than Norway because it is on the leeward side of the peninsula, or the side away from the westerly winds. Figure 8 (p. 13) shows that it also has less rain than Norway. Give a reason for this.

Waste land. More than half of Norway is waste land — too rough for farming and too cool for the growth of valuable trees. Sweden also has much waste land, but not so large a part of the country is useless. Explain why.

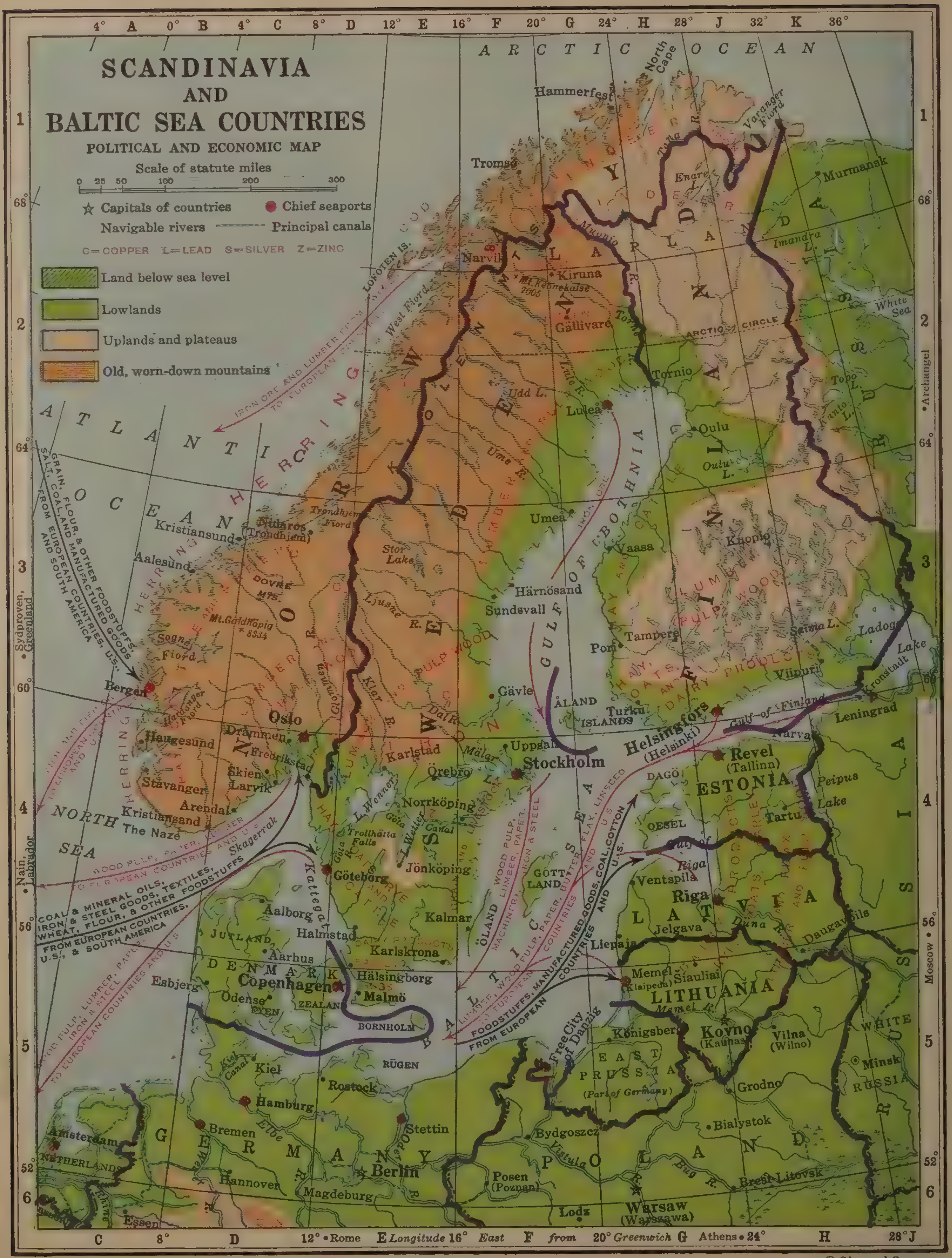
Farming in Sweden. Since nearly all the lowland region of the Scandinavian Peninsula is in Sweden, more people can make a living by farming in that country than in Norway. Most of the farms are in the broader, southern part of the lowland. Why?

Because of the cool climate, the Swedish farmers raise more oats, rye, and barley than wheat. On nearly all the farms you will see cattle, and you will find that the farmers raise hay and root crops, such as turnips and carrots, to feed the cattle in the winter. Potatoes also are an important crop. *See Figure 172.*

The southernmost part of Sweden is an important dairying section, and the farms there will remind you of Denmark. Most of the dairy farmers keep pigs as well as cows, and many raise sugar beets as a money crop.

Farming in southern Norway. Norway is so mountainous that less than four per cent of the land is used for crops. The best farm lands are in the lowland region and in the valleys in the southern part of the country. There the people carry on farming much as their neighbors in Sweden do.

West-coast farms. When you were studying "Home Life in Far-away Lands," you learned about the people who live on little farms along the fiords of western Norway. They keep a few cattle, sheep, and goats. In the summer the older girls take the cattle to pastures high in the mountains. The men and boys stay at home, raising grain, potatoes, and forage crops on the farms. They also cut every bit of hay they can find, and store it in the barns for winter feed for the live stock. *See Figure 173.*



SCANDINAVIA AND BALTIC SEA COUNTRIES

POLITICAL AND ECONOMIC MAP

Scale of statute miles
0 25 50 100 200 300
☆ Capitals of countries
● Chief seaports
Navigable rivers
Principal canals
C=COPPER L=LEAD S=SILVER Z=ZINC
▨ Land below sea level
🟩 Lowlands
Uplands and plateaus
Old, worn-down mountains
ARCTIC OCEAN
ATLANTIC OCEAN
NORTH SEA
NORWAY
SWEDEN
FINLAND
LAPLAND
RUSSIA
ESTONIA
LATVIA
LITHUANIA
DENMARK
GERMANY
POLAND
EAST PRUSSIA (Part of Germany)
NETHERLANDS
Free City of Danzig
GULF OF BOTHNIA
BALTIC SEA
Gulf of Finland
Gulf of Riga
Skagerrak
Kattegat
HERRING
HERRING
LOFOTEN IS.
West Fiord
North Cape
Hammerfest
Varanger Fiord
Murmansk
Imandra L.
White Sea
ARCTIC CIRCLE
Tromsø
Narvik
Mt. Kebnekaise 7005
Kiruna
Gällivare
Engre L.
Muonio R.
Tana R.
Torne R.
Tornio
Luleå
Lule R.
Udd L.
Ume R.
Umeå
Oulu
Oulu L.
Topo L.
Kanto L.
Archangel
Nidaros (Trondhjem)
Trondhjem Fiord
Kristiansund
Aalesund
DOVRE MTS.
Mt. Galdhöpig 8334
Sogne Fiord
Hardanger Fiord
Bergen
Stor Lake
Ljusne R.
Glommen R.
Klar R.
Dal R.
Härnösand
Sundsvall
Vaasa
Kuopio
Tampere
Pori
Saima L.
Ladoga Lake
Viipuri
Kronstadt
Leningrad
Narva
Gävle
ÅLAND ISLANDS
Turku
Helsingfors (Helsinki)
Oslo
Drammen
Fredrikstad
Haugesund
Skien
Larvik
Stavanger
Arendal
Kristiansand
The Naze
Karlstad
Örebro
Mälar L.
Uppsala
Stockholm
L. Wenner
L. Wetter
Göta Canal
Göta R.
Trollhätta Falls
Norrköping
Jönköping
Göteborg
GOTTLAND
ÖLAND
Kalmar
Karlskrona
Halmstad
Hälsingborg
Malmö
Copenhagen
ZEALAND
FYEN
Odense
Esbjerg
Aarhus
Aalborg
JUTLAND
BORNHOLM
RÜGEN
DAGÖ
OESEL
Revel (Tallinn)
Tartu
Peipus Lake
Ventspils
Riga
Düna
Jelgava
Daugavpils
Liepaja
Memel (Klaipeda)
Siauliai
Memel R.
Kovno (Kaunas)
Vilna (Wilno)
Königsberg
Grodno
Minsk
WHITE RUSSIA
Bialystok
Bydgoszcz
Vistula
Bug R.
Brest-Litovsk
Posen (Poznan)
Lodz
Warsaw (Warszawa)
Kiel
Kiel Canal
Rostock
Hamburg
Bremen
Elbe
Stettin
Oder R.
Berlin
Hannover
Magdeburg
Amsterdam
Rhine
Essen
Sydproven, Greenland
Nain, Labrador
Moscow
Athens
Rome
IRON ORE AND LUMBER FROM NARVIK TO EUROPEAN COUNTRIES
GRAIN, FLOUR, & OTHER FOODSTUFFS, SALT, COAL, AND MANUFACTURED GOODS FROM EUROPEAN COUNTRIES, U.S., AND SOUTH AMERICA
COAL & MINERAL OILS, IRON & STEEL GOODS, TEXTILES, WHEAT, FLOUR, & OTHER FOODSTUFFS FROM EUROPEAN COUNTRIES, U.S., & SOUTH AMERICA
WOOD PULP, PAPER, LUMBER TO EUROPEAN COUNTRIES AND U.S.
WOOD PULP, LUMBER, PAPER, IRON & STEEL TO EUROPEAN COUNTRIES AND U.S.
FOODSTUFFS, MANUFACTURED GOODS, COAL, COTTON FROM EUROPEAN COUNTRIES AND U.S.
WOOD PULP, LUMBER, PAPER, MACHINERY, IRON & STEEL
BUTTER, FLAX, LINSEED
LUMBER
PULP WOOD
HAY, OATS, AND DAIRY PRODUCTS
CATTLE
Longitude East from Greenwich
4° 0° 4° 8° 12° 16° 20° 24° 28° 32° 36°
68° 64° 60° 56° 52°
A B C D E F G H J K
1 2 3 4 5 6

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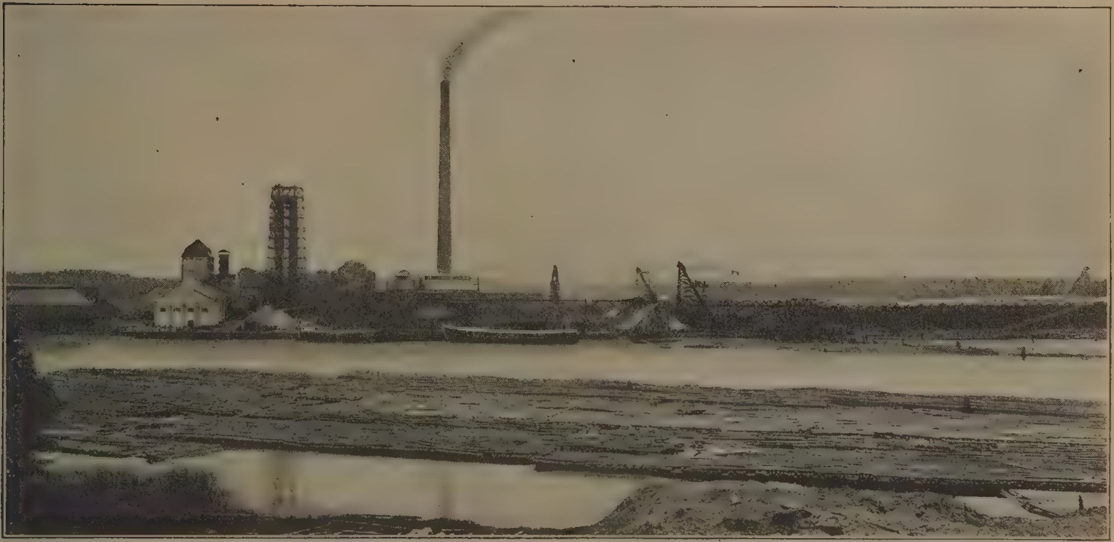


Swedish State Railways Travel Information Bureau

Figure 174. One of the many pulp mills in Sweden. In these mills large quantities of pulp-wood logs from the forests are used to make wood pulp. Much Swedish wood pulp is exported to other countries, and much is used in Sweden itself to make newsprint (paper for printing newspapers), wrapping paper, and cardboard.

Map discoveries. Now work out the map studies in Group II on this page and you will discover some other kinds of work in Scandinavia.

Scandinavian resources. If the people of Norway and Sweden had to depend on farming alone, both countries would be poor; for not even Sweden has any large surplus of farm products for export. Fortunately, both countries have other resources more valuable than their farm lands. In Norway these resources are fisheries and forests; and in Sweden, forests and mines.

Forests and forest work. About a fourth of Norway and more than half of Sweden are covered with valuable forests. The trees are largely pines, spruces, and other softwoods which are valuable for lumber and pulp wood. In both countries thousands of men work in the forests in the winter, cutting down the trees and getting the logs to the rivers. In the spring, when the ice melts, the logs are floated down the streams to sawmills and pulp mills. *See Figure 174.*

Turn over to page 178.

MAP STUDIES

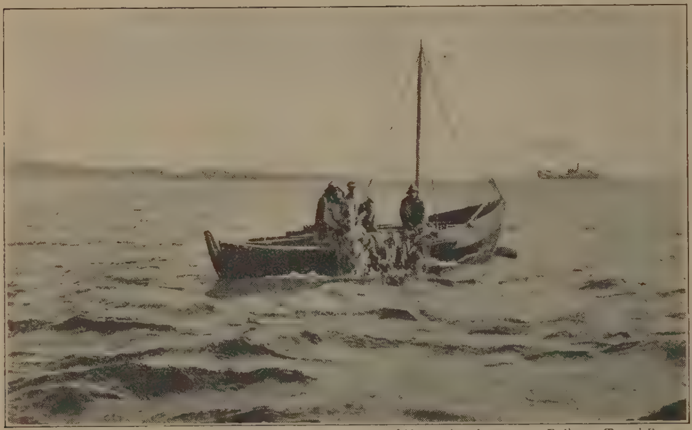
Group I

1. Which of the two Scandinavian countries borders the Atlantic Ocean? 2. Which one borders the Baltic Sea and the Gulf of Bothnia? 3. Which country is almost entirely mountainous? 4. How should you describe the coast line of that country? 5. Which Scandinavian country has a considerable extent of lowland?

6. Trace the arctic circle across Norway and Sweden. 7. What does that suggest about the climate of the two countries? 8. In which country do you think more people can make a living by farming? Why? 9. In which country do you think the people make greater use of the sea? Why?

Group II

1. What do you find among the imports of Norway and Sweden to show that the farms of those countries do not provide all the food that the people need? 2. What do you find among the exports to prove that forest work is very important in both countries? 3. In which country do you think fishing is very important? Why? 4. Which country exports a product of its mines?



Courtesy of Norwegian Government Railways Travel Bureau

Figure 175. Norwegian fishermen hauling up a net full of herring. In small boats such as this the fishermen go out in all sorts of weather to catch herring and other kinds of fish along the coast.

Industries depending on forest work. Sawmills, pulp mills, and paper mills are found all through southern Norway and Sweden, and along the Swedish coast of the Gulf of Bothnia. From these mills large quantities of lumber, wood pulp, and paper go to the leading ports for export to Great Britain, France, and other European countries where the forests have been largely cut down. Our own country is a good customer for Scandinavian wood pulp. Can you explain why?

Another Scandinavian industry which depends on forest work is the making of safety matches. Millions of boxes of these matches are exported each year to many different countries of the world.

Norwegian fisheries. In Norway, fishing is more important than any other kind of work, and fish and fish products are the most valuable exports. There are several reasons for this: (1) the land is so poor for farming that the people are forced to make use of the sea; (2) the neighboring waters are rich in fish; (3) the irregular coast line provides many good harbors; and (4) fishing can be carried on the year round because the harbors do not freeze over in the winter.

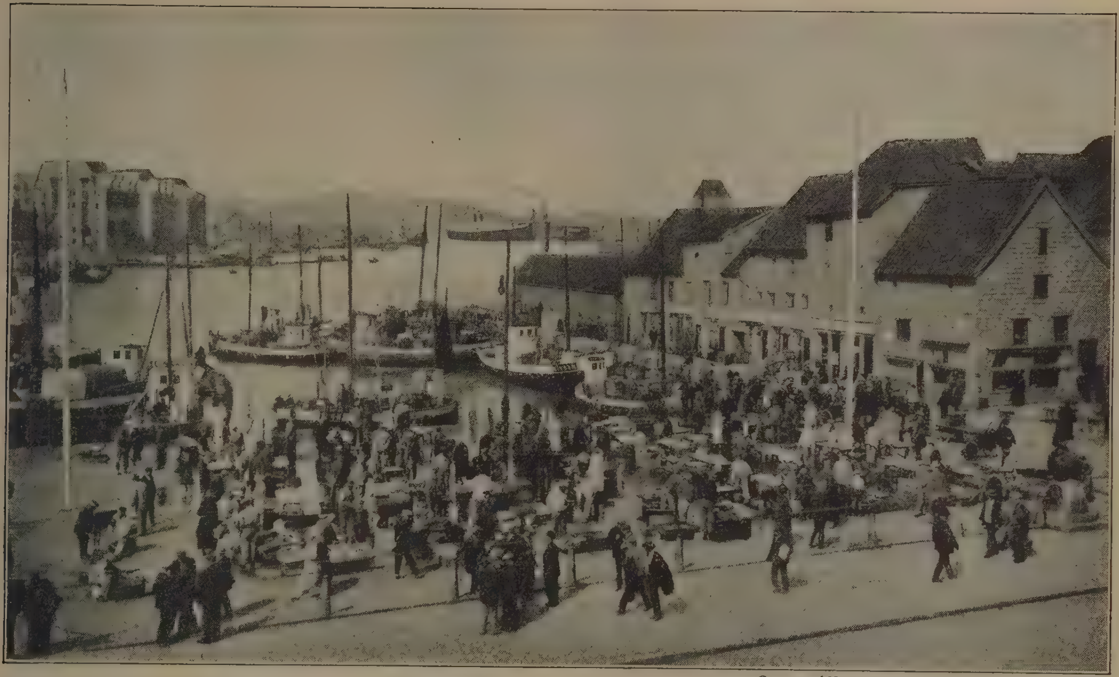
The chief kinds of fish caught by the Norwegians are herring, cod, mackerel, and salmon. The best cod-fishing grounds are near the Lofoten Islands. Find these islands on the map on page 176 (*E1*). Herring are caught all along the coast, mackerel chiefly in the south, and salmon in the fiords. *See Figure 175.*

Preparing fish for export. Some of the fish are exported fresh, but much greater quantities are frozen or preserved in other ways. Cod are salted and dried, as they are in New England. The larger herring are salted or smoked, and the little ones are preserved in olive oil or other vegetable oils and sold in tins as Norwegian "sardines." All this work gives employment to large numbers of people.

The center of the fishing industry. On the map on page 176 find Bergen (*C3*). This is the second largest city in Norway, and the business center of the fishing industry. It is also the great port of export for Norwegian fishery products. *See Figure 176.*

Great Britain and the other densely populated countries of Europe provide excellent markets for Norwegian fish. Can you explain why? Large quantities of preserved fish, such as smoked herring and Norwegian sardines, are also sent to the United States and other distant countries.

Why fishing is less important in Sweden. The Swedish people carry on much less fishing than the Norwegians because the Baltic Sea and the Gulf of Bothnia are less salty than the Atlantic Ocean, and the fish that live in their waters are not the best kinds for food. Furthermore, these inland waters freeze over for several months each winter, and therefore fishing can be carried on only part of the year.



Courtesy of Norwegian Government Railways Travel Bureau

Figure 176. The outdoor fish market at Bergen, showing some of the fishing boats. Here the people gather to buy fresh fish when the boats come in. The buildings at the right belong to fish merchants. Study the imports of Bergen on the map (p. 176). What do you find among them that is used in preserving fish?

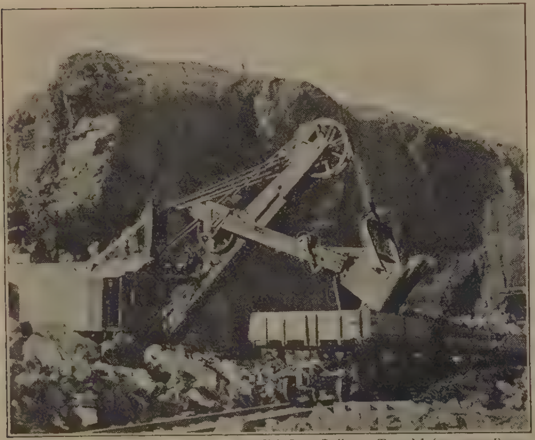
Sweden's wealth of iron ore. On the map on page 176 find the two parts of Sweden where iron ore is mined. In the Lapland district, north of the arctic circle, Sweden has one of the best iron-ore fields of Europe. Unfortunately, Sweden has no coking coal, and so the greater part of the iron ore that is mined there is exported to Germany, Great Britain, and other countries where coal is plentiful. *See Figure 177.*

On the map on pages 144–145 find the railroad which connects the iron mines of northern Sweden with the Atlantic coast and the coast of the Gulf of Bothnia. During the summer the ore is sent to the Swedish port of Luleå (*G2*) for shipment to southern Sweden or for export to other countries. But in the winter, when the Gulf of Bothnia is frozen over, the ore is shipped from the Norwegian port of Narvik (*F1*). Explain why.

Iron-and-steel manufacturing. In spite of the lack of coal, the iron-mining district which is located in southern Sweden has many blast furnaces and steel mills. The manufacture of iron began here long ago because the ore was abundant and the forests supplied charcoal for fuel. Coking coal is now imported from Germany and Great Britain, but some of the finest Swedish iron is still made with charcoal.

Much of the Swedish iron and steel is exported to the great manufacturing countries of Europe, and much is used at home for the manufacture of machinery and other iron and steel products. Great Britain is the best customer for Swedish steel, and large quantities are used in the manufacture of cutlery at Sheffield.

Norway's mineral resources. Norway has some iron and other metal ores; but, like



Swedish State Railways Travel Information Bureau

Figure 177. Mining iron ore in an open-pit mine in the Lapland district of Sweden. The steam shovel shown in the picture was manufactured in our state of Ohio.

Sweden, it has no coal for smelting. The lack of coal and the difficulty of building railroads in the mountains have held back the development of mining and the use of the mineral resources.

A source of coal for Norway. On Figure 168 (p. 171) find the group of islands known as Svalbard or Spitsbergen. These islands belong to Norway. They are so far north that they have few people, but they are valuable to the Norwegians because they have large quantities of coal. The coal is mined and exported to Norway only in the summer, for during the winter ships cannot reach the islands on account of the ice.

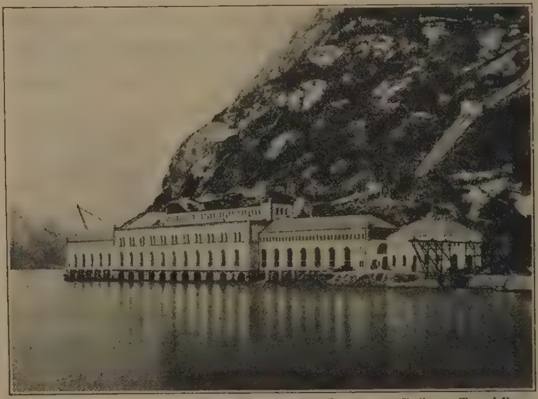
Using water power instead of coal. Because Scandinavia is mountainous and has much rain, it has many swift-flowing streams which furnish water power for making electricity. Both Norway and Sweden have large numbers of hydroelectric plants, which provide electricity for light, for telephones, and for power for street cars, railroads, and manufacturing plants. Thus the streams make up in part for the lack of coal. *See Figure 178.*

Two thirds of all the power used in Sweden comes from hydroelectric plants, and even more electric power is used in Norway. In both countries, but especially in Norway, electricity is used for the manufacture of chemicals and fertilizers. Do you remember the fields in Chile where nitrate is mined for fertilizer? In Norway and Sweden the people have a wonderful electrical process which takes a gas called nitrogen from the air and transforms it into nitrate.

Three important cities. Turn to the map on page 176 and find Oslo (*D4*), Göteborg (*E4*), and Stockholm (*F4*). Which of these cities is the capital of Norway? Which is the capital of Sweden? In what way are all three of these cities alike?

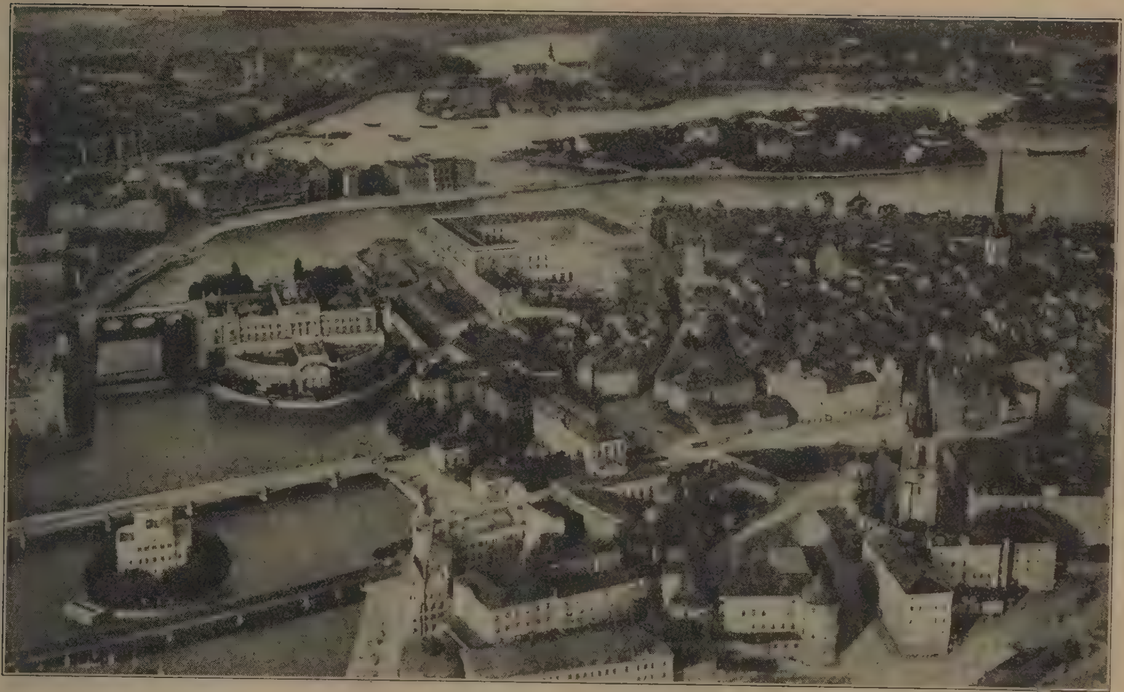
Oslo is the capital and largest city of Norway. It has an excellent harbor at the head of a fiord and is the leading seaport of the country. What do you see in the location of Oslo which explains why it is a larger city than Bergen?

Stockholm, the capital and largest city of Sweden, is an important seaport and one of the most beautiful cities of Europe. The center of the city is located where a number of short waterways lead from Lake Mälar to the Baltic Sea, and part of the city has been built on peninsulas and islands. *See Figure 179.*



Courtesy of Norwegian Government Railways Travel Bureau

Figure 178. A hydroelectric plant on the Hardanger Fiord in Norway. Electricity from power plants like this is sent over wires to many cities and towns in Norway.



Swedish State Railways Travel Information Bureau

Figure 179. An airplane view of the heart of Stockholm, which has been the capital of Sweden for 700 years. The large square building in the center is the royal palace, where the king of Sweden lives, and to the left of the palace are the Houses of Parliament. The winding harbor of Stockholm is lined with stone wharves, and small steamers, ferryboats, and launches carry people from one part of the city to another.

Stockholm has docks for ocean ships, and wharves for smaller steamers which run to other ports along the coast. In the winter, ice-breakers are used to keep the harbor open for shipping.

From Stockholm small boats go down the coast to the entrance to the Göta Canal and from there through the inland waterway to Göteborg. This city is the leading port of Sweden. What reason can you give for the fact that more Swedish trade passes through this port than through Stockholm?

Norwegian dependence on the sea. What reasons can you give for the fact that more people can make a living on the land in Sweden than in Norway? Why have the Norwegians been forced to make greater use of the sea than the Swedish people?

From the earliest days the Norwegians have been famous seafaring people. Their country is so poorly suited to farming that long ago they turned to the sea in order to obtain part of their food by fishing. Fishing led them to build boats and to venture farther and farther from land. Thus they became skillful seamen. Before the year 900 the Norsemen had made settlements in Iceland, and before the year 1000 Eric the Red had established a settlement in Greenland. It is interesting to remember that that was five hundred years before Columbus made his first voyage of discovery.

Today, as you know, Norway is famous for its fisheries. In addition to all its fishing boats Norway has the largest fleet of whaling ships in the world. These ships go to the Far South to catch whales in the icy waters near Antarctica, and they obtain millions of dollars' worth of whale oil each year. Whale oil is obtained by heating with steam the blubber, or fat, of whales. This work is done on the whaling ships. The oil is used for dressing leather, for lubricating, or oiling, machinery, and for many other purposes.

Norway has a large fleet of merchant ships also. Some of these ships carry goods back and forth between Norway and other countries, but many of them are carriers for other nations. They are owned by shipping companies in Norway, and they earn money for their owners by carrying goods between the ports of various foreign countries.

A trade test. 1. From the map on page 176 prove that (1) the leading exports of Sweden come directly or indirectly from its forests and mines; (2) that the leading exports of Norway come directly or indirectly from its fisheries and forests.

2. Explain why the Scandinavian people import (1) wheat and other foodstuffs; (2) coal and mineral oils; (3) many kinds of manufactures.

Making comparisons. The four sentences below make comparisons between Norway and Sweden. Complete each sentence by naming Norway and Sweden in the proper places and giving reasons for the fact stated.

1. Farming is more important in Sweden than in Norway because ______________________.
2. Fishing is more important in Norway than in Sweden because ______________________.
3. Mining is more important in Sweden than in Norway because ______________________.
4. Lumbering is important in ~~Sweden~~ Norway and even more so in Sweden because ____________.

II. FINLAND AND THE BALTIC COUNTRIES

Foreword. East of the Baltic Sea and the Gulf of Bothnia are the republics of Finland, Estonia, Latvia, and Lithuania. Find them on the map on page 176. Estonia, Latvia, and Lithuania are often called the Baltic countries. Judging from the products and exports, what two kinds of work do you think are most important in Finland and the Baltic countries?

FINLAND

Handicaps to farming. The map shows that much of Finland is an upland region. The surface of this region is so hilly and rocky that it is not good farming land. Along the coast there are lowlands, but even these are not very well suited to farming because they have coarse glacial soils. Other handicaps to farming are the cool climate and the short growing season. Nevertheless, many of the people of Finland are farmers. Their chief crops are hay and oats, and they keep a good many cattle. In the southern part of the lowland region dairy farming is important, and considerable quantities of butter are exported. *See Figure 180.*

The greatest resource. When you were studying the map, did you notice the large number of lakes in the southern part of the upland of Finland? The land in this lake region is covered with thick forests of pine and spruce trees, which are the greatest natural resource of Finland. Thousands of men work in the lumber camps, and many others in the sawmills, pulp mills, and paper mills. Lumber of various kinds is by far the most valuable export of Finland, and wood pulp and paper are next. *See Figure 181.*

Helsingfors. On the map on page 176 find Helsingfors, or Helsinki, as the Finns call it (*H 3*). This is the capital, the largest city, and the chief seaport of Finland. In what part of the country is it located? On what body of water?

The Gulf of Finland, like the Gulf of Bothnia, freezes over during the winter, and for several months the ice is so thick at Helsingfors that no shipping can be carried on.

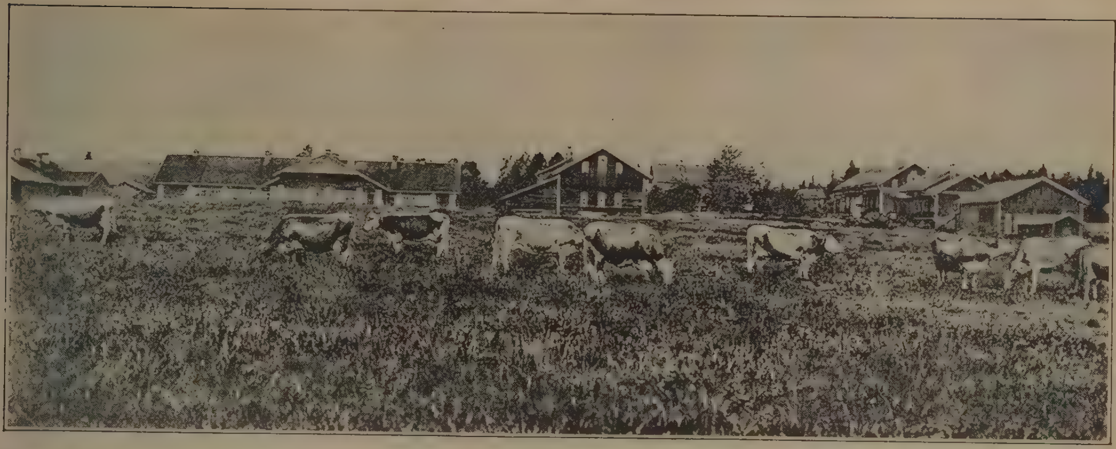


Figure 180. Cows grazing on a farm in the southern part of Finland. The cool, moist climate of Finland is well suited to dairy farming, for the grass remains fresh and green all summer long, and hay grows well. Can you name a part of the United States which is well suited to dairy farming for much the same reasons?

Lapland. The northern part of Finland, Sweden, and Norway is called Lapland because it is the home of the people known as the Lapps. It is part of the *tundra* of northern Eurasia, — the belt of cold, treeless land which borders the Arctic Ocean. The Lapps are wandering people who make their living by keeping herds of reindeer, which provide them with milk, meat, clothing material, and means of transportation.

ESTONIA, LATVIA, AND LITHUANIA

Three small countries. The small countries of Estonia, Latvia, and Lithuania are called the Baltic countries because of their location on the eastern side of the Baltic Sea. They are low countries, covered with glacial soils left by the great European ice sheet.

Farming and forest work. Although the soils are rather poor, most of the people of the Baltic countries make their living by farming. They cannot grow wheat because the climate is too cold, but they can raise such crops as rye, oats, barley, and potatoes. Many of them are dairy farmers, and butter is one of the leading exports. Another important farm product is flax, which grows well in the cool climate. Some of the flax is grown for the fiber, and some for the seed, and both products are exported.

Nearly one fourth of all the land in these countries is forested; and here, as in Finland and Scandinavia, lumber, wood pulp, and paper are valuable exports.

The leading cities. The three largest cities of the Baltic countries are the capitals. Name each one from the map on page 176. Which two are Baltic seaports? Which one is an inland city?

Riga is the largest of the three cities and a more important seaport than Revel (Tallinn). Its harbor is seldom closed by ice for more than a few days in the winter, while the harbor of Revel is sometimes closed for weeks at a time. Riga is also an important center for the manufacture of linen goods from home-grown flax, and cotton goods from cotton imported from the United States. *See Figure 182.*

Kovno is the smallest of the three capital cities, chiefly because it is an inland city rather than a seaport. Lithuania has a shorter coast line than the other Baltic countries, and Memel is its seaport. Find Memel on the map on page 176 (*G5*).

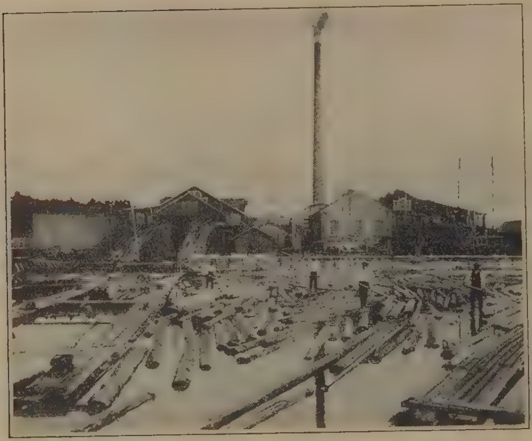
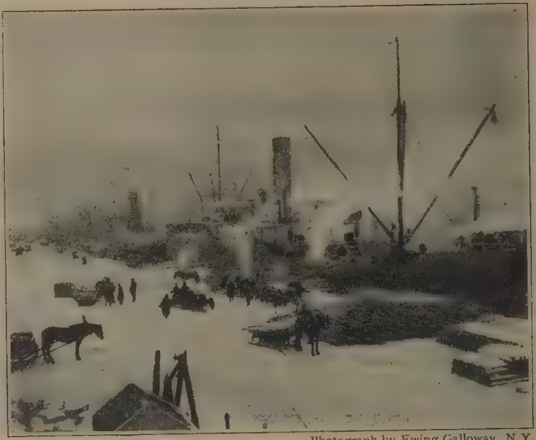


Figure 181. A sawmill in Finland, showing the log pond. The wooden runways in the distance support moving belts which carry the logs into the mill.



Photograph by Ewing Galloway, N.Y.

Figure 182. A view along the wharves at Riga in the winter time. The ship nearest you is being loaded with lumber which is to be carried to England.

Can you give these names? Give the name of each of the following:

1. The gulf between Finland and Sweden. Bothnia
2. The islands near the best cod-fishing grounds of Norway. Lofoten
3. The canal which forms part of the inland waterway across southern Sweden. Gota
4. The name given to the northern part of Finland, Sweden, and Norway. Scandinavia
5. The sea between Sweden and the Baltic countries. Baltic
6. The gulf south of Finland. Finland
7. The group of islands in the Far North belonging to Norway. Spitsbergen Jan Mayen

A ship test. Eight ships are steaming away from ports of Scandinavia and the Baltic Sea countries. The country which each ship has just left is given in the first column below, and the ship's cargo is given in the second column, opposite the name of the country. Name the port where each ship was loaded.

		(Port)
Norway	fish	Bergen
Finland	newsprint	Helsingfors
Sweden	iron ore	Lulea
Estonia	butter	Revel
Sweden	machinery	Goteborg
Latvia	lumber	Riga
Lithuania	flax	Memel
Norway	wood pulp	Oslo

Special credit work. 1. Look at home and in the stores to see how many things you can find that came from the Scandinavian and Baltic countries. 2. Try to make a collection of safety-match boxes from these various countries.

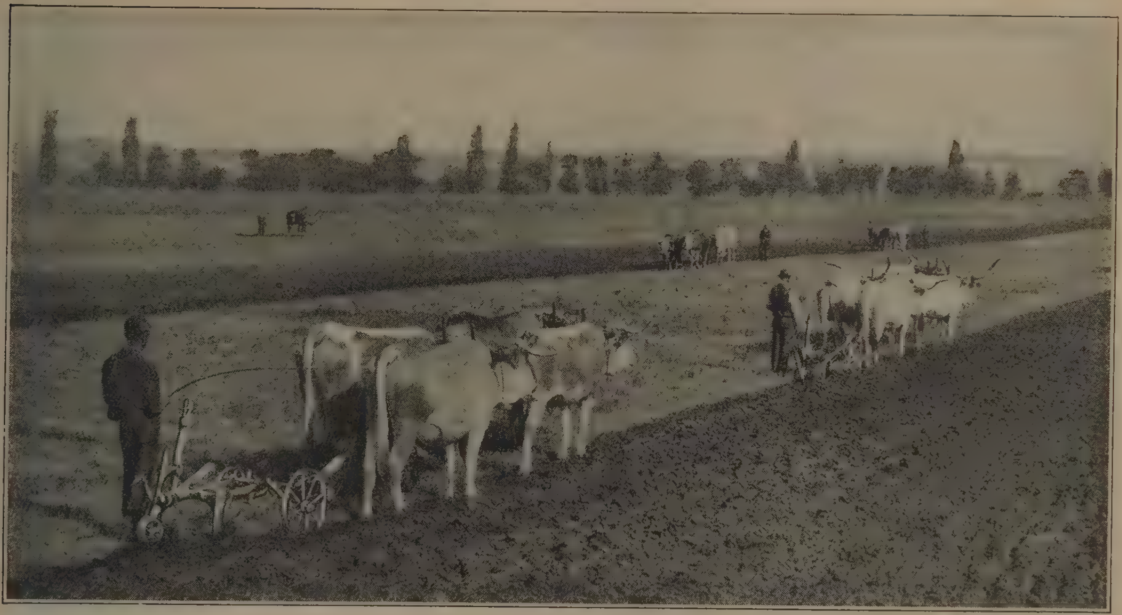
Sentences to complete. Complete each sentence below by giving reasons:

1. The greater part of the land in Norway, Sweden, and Finland is not well suited to farming because ------------------------------.
2. These countries export large quantities of lumber, wood pulp, and paper because -------.
3. Norway and Sweden have much water power because -------------------------.
4. Water power is especially valuable in these countries because ------------------------.
5. The Norwegians make much use of the sea because -------------------------------.
6. Norway, Sweden, and Finland cannot support so many people as the countries farther south in Europe because ------------------.

Matching countries and capitals. Match correctly the countries and capital cities below:

4 Estonia
1 Finland
5 Latvia
2 Lithuania
3 Norway
6 Sweden

1 Helsingfors
2 Kovno
3 Oslo
4 Revel
5 Riga
6 Stockholm



By Ewing Galloway, N.Y.

Figure 183. Plowing land for winter wheat on a large farm in the Plain of Hungary. Notice how level the surface is in this region of central Europe. Find the Plain of Hungary on the map on page 12. What is its elevation? What does Figure 8 show you about the rainfall of the plain with reference to farming?

THE COUNTRIES OF CENTRAL EUROPE

I. GETTING ACQUAINTED WITH CENTRAL EUROPE

Foreword. Turn to the map on pages 140–141 and find Germany, Poland, Czechoslovakia, Switzerland, Austria, and Hungary. The total area of these six countries of central Europe is less than one sixth of the area of the United States, and yet they have about 125,000,000 people. How does that compare with the number of people in our entire country? What can you say, then, about the density of population in central Europe?

Germany is the largest and by far the most important of the central European countries, and the German language is used by more than half of all the people in this part of the continent. It is the language not only of Germany but of Austria and a large part of Switzerland. The people in the western part of Switzerland speak French, and some of those in the southern part speak Italian. The Hungarians have a language of their own, and so have the Poles, the Czechs, and the Slovaks.

Although the nations of central Europe differ from one another in language and in many other ways, they are all energetic and progressive, and they are making excellent use of their natural resources. As you study this chapter try to discover what those resources are, and how, by using them wisely, so many people can make a living in this part of Europe.

Something to do. Many people in our country trace their family history back to the countries of central Europe. See if there are any pupils in your class who were born in central Europe or whose families came from there.

Some differences in surface. As we study about the countries of central Europe we shall find that differences in the surface of the land have much to do with the life and work of the people. For example, what differences in the land and its use are shown in Figures 183 and 184?

In order to picture to yourself the many differences in surface in central Europe, use the map on pages 140–141 to answer the following questions:

1. What two of the central European countries have a large share of the Central Plains of Europe? 2. What kind of work is important in those plains? 3. How does the surface in southern Germany and Poland differ from the surface of the northern plains? 4. What country of central Europe has an upland region surrounded by a ring of old, worn-down mountains? 5. What do you find on the map to show that the uplands of Germany, Poland, and Czechoslovakia are not too rough for farming? 6. What reason have you to think there may be industrial centers in these upland regions?

7. What region of young, rugged mountains does Poland share with Czechoslovakia? 8. What mineral wealth have those mountains? 9. In what country is the central portion of the Alps? 10. What country is made up largely of an eastern extension of the Alps? 11. What mineral wealth have the mountains of Austria?

12. Which of the central European countries lies almost wholly in a lowland region which is surrounded by rugged mountains? 13. How do you think most of the people of the Plain of Hungary get their living?

The northern plain of Germany and Poland. The map shows clearly that farming is very important in the northern plain of Germany and Poland. This plain has a gently rolling surface, with many low hills and many lakes, ponds, and marshes. It is a region covered with glacial soils left by the great European ice sheet of long ago. For the most part these soils are sandy and poor, and in order to make them produce good crops the farmers have to enrich them with large quantities of fertilizers. Study the map (pp. 140–141) and see if you can discover a mineral resource of Germany which is of help to the farmers.

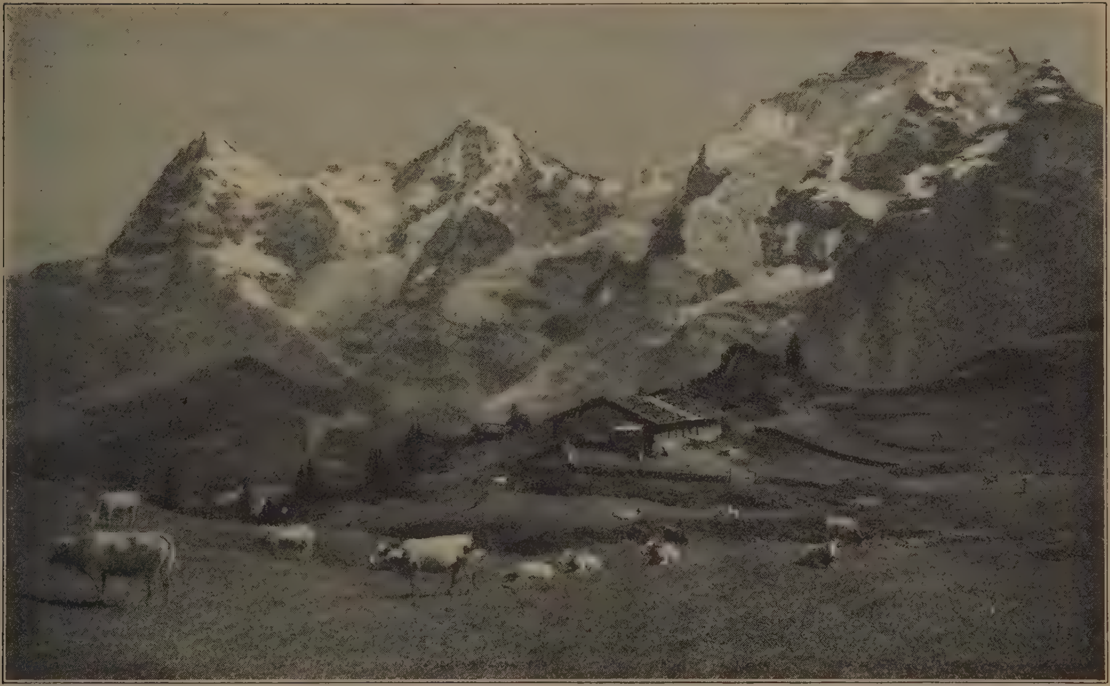
In Germany and western Poland large areas which were once marshes have been drained and turned into good farm lands. But in eastern Poland the swamps and marshes have not been drained, and there are great stretches of land too wet for farming. Find these wet lands on the map on pages 140–141.

Higher regions in the south. South of the northern plain is a belt of uplands and old, worn-down mountains. The soils of the uplands are good; and although these regions are rougher than the northern plains, they have broad valleys which provide excellent farm lands.

Turn to the map on pages 140–141 and find some names in central Europe which suggest that the mountains are forested. Almost all the land that is level enough for farming has been cleared, but there are forests on the mountain slopes and in the rougher parts of the uplands. These are cared for so that they produce regular "crops" of timber.

The Alps and the Carpathians. South of the uplands of Germany are the Alps, which extend from southeastern France through Switzerland and northern Italy into Austria. These are the highest mountains of Europe, and, as you know, there are snow fields and glaciers among their summits. Farther northeast are the Carpathians. They are much lower than the Alps, and they are forested nearly to their summits.

The slopes of these rugged mountains are for the most part too steep for farming, and the higher parts of the Alps are too cool for any crops. The lower slopes of the Alps are covered with forests, and above the tree line there are grassy pastures where cattle, sheep, and goats graze during the summer.



Courtesy of Swiss Federal Railroads

Figure 184. Cattle grazing on the high pastures in the Swiss Alps. What reason can you give for the fact that far more land in the Alps is used for grazing than for the raising of crops? The snow-capped mountain peaks shown in the picture rise to elevations of more than 13,000 feet above the level of the sea.

The Plain of Hungary. The Plain of Hungary will remind you of our prairies; for it is a grassland with few trees except along the streams, and it is one of the best farming regions of Europe. What other countries share this plain with Hungary? Yugoslavia Rumania

The rainfall of central Europe. Figure 8 on page 13 shows that very little of central Europe has less than 20 inches of rain a year. That is because there are no ranges of mountains running from north to south in western Europe as there are in the western part of our country, and therefore there is nothing to prevent the westerly winds from carrying moisture far inland from the Atlantic Ocean. Central Europe, then, has plenty of rain for farming.

The heaviest rainfall is in the mountainous regions, especially in the Alps. Explain why. The Alps are so high that much of the annual, or yearly, rainfall comes in the form of snow. That accounts for the snow fields and glaciers which never melt away.

Temperature conditions. Central Europe has greater extremes of temperature than western Europe because it is farther from the Atlantic Ocean. For example, the summers are hotter and the winters colder in Berlin, the capital of Germany, than in London, and there are still greater differences between the summer and winter temperatures at Warsaw, the capital of Poland.

Wherever you travel in the temperate zones you will find that inland regions have greater extremes of temperature than coastal regions. That is because they do not have the warming influence of the oceans in winter or the cooling influence in summer.

Length of growing season. The growing season in the northern plain of central Europe is long enough for grains such as wheat, oats, and rye to ripen. The uplands have a growing season of about the same length as the northern plain; for while they are somewhat farther south, they are higher.

The longest growing season in central Europe is in the Plain of Hungary, and the shortest growing season is in the higher parts of the Alps in Switzerland and Austria. Give reasons for these facts.

Central Europe as a source of rivers. The maps will show you that several of the longest and most important European rivers rise in the higher parts of central Europe. You already know that the Rhine and the Rhône rise in the Swiss Alps. Which of these two rivers flows northward to the North Sea? In what country is the mouth of this river?

On the map on pages 140–141 find each of the following rivers and trace them from source to mouth: the Weser (*L2*), the Elbe (*M2*), the Oder (*O2*), the Vistula (*R2*), and the Danube (*L4*). In order to trace the lower course of the Danube, you will need to use the map on pages 226–227. As you trace each river, name the country in which it rises and the country where it reaches the sea.

Inland waterways. In studying the important rivers that rise in central Europe did you notice that they are all navigable? Turn to the map again, and you will see that many of their tributaries are also navigable and that the different river systems are connected by canals. This great network of inland waterways furnishes slow but inexpensive means of transportation.

In order to understand why transportation by river and canal is so important in central Europe, we must remember that this part of the continent was thickly populated long before railroads were dreamed of. In those early days the rivers were the chief routes of travel and transportation, and the inland towns that grew the fastest were those which had the best locations for trade by water. To make it possible for towns on different rivers to trade with one another, canals connecting the various river systems were built.

The map on pages 144–145 shows that today central Europe is covered with a network of railroads. Nevertheless, here, as in France, rivers and canals continue to be used for transporting large quantities of bulky goods, chiefly because transportation is cheaper by water than by rail. In fact, in recent years old canals have been deepened and new canals have been built.

Countries without seacoasts. When you were studying the map, you must have noticed that four of the countries of central Europe have no seacoast. What four countries are they?

For many years before the World War of 1914–1918 Switzerland was the only landlocked country of central Europe. Czechoslovakia, Austria, and Hungary were parts of the empire of Austria-Hungary, which extended southward to the eastern side of the Adriatic Sea. After the war, when Czechoslovakia, Austria, and Hungary became independent, the peace treaty provided ways in which these new landlocked countries could make use of free routes to the sea.

Internationalized rivers. In order to give the landlocked countries of central Europe means of shipping goods cheaply by water to the seaports of neighboring countries, the more important navigable rivers were *internationalized.* That means that they were declared open and free for the use of all nations on equal terms.

The Danube is internationalized all the way from Ulm, in southern Germany, to the Black Sea. This river has always been an important highway of transportation and trade, and it is a great help to Austria, Czechoslovakia, and Hungary to be able to use it freely. On the map on pages 226–227 trace the route by which ships may reach the Mediterranean Sea from the mouth of the Danube.

The Elbe and the Oder rivers are internationalized as far as they are navigable, giving Czechoslovakia free water routes to the North Sea and the Baltic Sea.

The Rhine, which you already know is a great highway of trade, is internationalized all the way from its mouth to Basel, in Switzerland, giving that little country a free navigable waterway to the port of Rotterdam. *See Figure 185.*

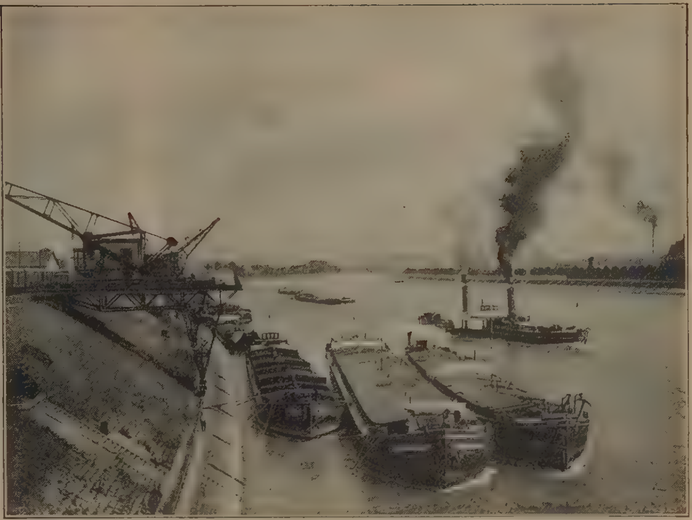


Figure 185. A view of the water front on the Rhine at Basel, in Switzerland. The long, low boats nearest you are barges for transporting freight. The steamer farther away is a passenger boat.

Something to prove. Prove that you are getting acquainted with central Europe by giving the names called for below:

1. The two largest countries of central Europe. Germany Poland
2. The four landlocked countries. Switz, Hung Austria Cze
3. The two countries that have a large share of the Central Plains of Europe. Germany Poland
4. The two countries of central Europe which share the Alps. Switz- Austria
5. The country in which the Bohemian Plateau is located. Czechoslovakia
6. The country which is almost wholly a plain. Hungary
7. The principal river of Poland. Vistula
8. The river that rises in the Black Forest and flows to the Black Sea. ~~Rhin~~ Danube
9. The river that rises in Switzerland and flows to the North Sea. Rhine
10. The river that rises in the Bohemian Plateau and flows to the North Sea. Elbe
11. The river that rises in Switzerland and flows to the Mediterranean Sea. Rhone

A shipping test. Use the map on pages 140–141 to show how goods may be shipped by water between each pair of places named in the next column:

1. From Danzig (*R1*) to Warsaw (*S2*). Vistula R
2. From Stettin (*O2*) to Breslau (*P3*). Oder R.
3. From Hamburg (*M2*) to Berlin (*N2*). [illegible]
4. From Hamburg (*M2*) to Prague (*O3*). [illegible]
5. From Rotterdam (*J3*) to Basel (*K5*). Rhine
6. From Cologne (*K3*) to Vienna (*P4*) and Budapest (*R5*). Rhine-[illegible]

A map to make. 1. On an outline map of Europe trace the boundaries of the countries of central Europe with a colored pencil, and print their names neatly.

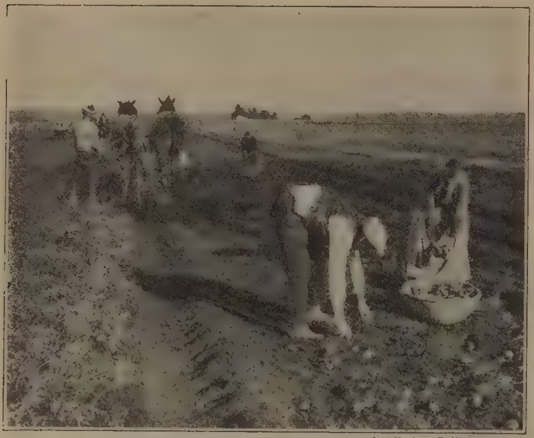
2. Add the names of the following rivers: the Rhine, Danube, Weser, Elbe, Oder, Vistula.

3. Find the capital cities of the central European countries on the map on pages 140–141. Show their locations by stars on your map and print their names.

4. Add red dots to show the locations of the seaports of Bremen, Hamburg, Stettin, and Danzig, and print their names.

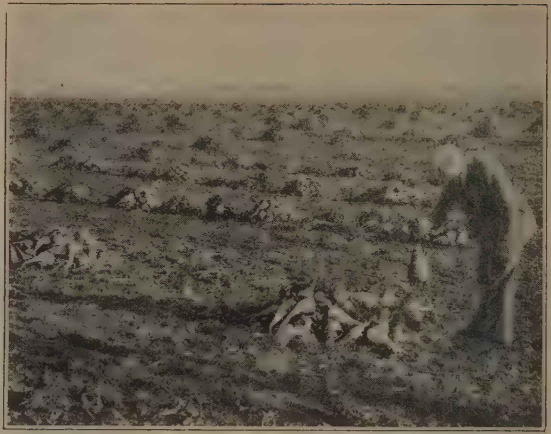
Some things to prove. Prove by the map you have made that

1. All but one of the capital cities of central Europe are on navigable waterways.
2. The four leading seaports are at the mouths of navigable rivers.



By Ewing Galloway, N.Y.

Figure 186. Harvesting potatoes in Germany. Notice that the farmers are using a potato-digger. Where in the United States could you see sights like this?



Photograph by Ewing Galloway, N.Y.

Figure 187. A sugar-beet field in northern Germany. The beets have been dug from the ground and their tops cut off, ready to be sent to a sugar factory.

II. THE REPUBLIC OF GERMANY

Foreword. Germany ranks with Great Britain and France as one of the leading countries of Europe and of the world. Before the World War it was larger than France, but at the end of the war some of its territory was given to neighboring countries. Today it is somewhat smaller than France, but it has half again as many people. The government of Germany has also changed since the war. From 1871 until 1918 it was an empire; since 1918 it has been a republic. Another change which came to Germany as a result of the war was the loss of its colonies. These were chiefly lands in Africa, and they are now governed by Great Britain and France.

Like France, Germany is a great agricultural country, and like Great Britain it is a great industrial and commercial country. As you study this section find answers to the following questions:

1. Why has Germany become a great manufacturing country?
2. Why does it rival France in agriculture?
3. In what ways is the foreign trade of Germany like that of Great Britain?

1. THE NORTHERN PLAIN AND THE BORDERING UPLANDS

If we should fly in an airplane over the northern plain of Germany, we should look down on a vast number of farms, many cities and towns, and a close network of railroads, rivers, and canals. Along the seacoast at the north we should see large seaports, and along the southern margin of the plain and in the neighboring uplands "forests" of smokestacks would tell us of busy industrial districts.

From the map on pages 140–141 tell what you expect to see on the farms of northern Germany. What reason does the map suggest for the industrial districts along the southern margin of the plain and in the neighboring uplands?

The Farm Lands of Northern Germany

Getting good crops from poor soils. Although the northern plain of Germany has rather poor glacial soils, the German farmers produce larger quantities of foodstuffs per acre than almost any other farmers in the world. The reason for this is that they use the best methods of work. They add plant food to the soils by using large quantities of fertilizer; they sow the best of seed and tend the growing crops carefully; and they rotate their crops in such a way that the soil never becomes "worn out." You will remember from your study of the United States that crop rotation means planting different crops in each field from year to year.

Germany's wealth of potash. You will also remember that the principal raw materials used in manufacturing fertilizers are potash, nitrate, and phosphate. Germany has the richest deposits of potash salts in the world. Turn to the map on pages 140–141 and find the places where the potash is mined. These mines help to provide the German farmers with fertilizers at prices they can afford to pay, and they make Germany the leading producer and exporter of potash.

The leading crops. The leading crops of northern Germany are rye, oats, and potatoes, because they grow well in the sandy soils and the cool climate. Wheat is also raised, but in much smaller quantities, for most of the soils are too sandy to make good wheat lands. Oats are grown chiefly for live stock. Rye is the principal bread grain, and rye and potatoes are the chief food crops. Large quantities of potatoes also are grown for making alcohol and starch. *See Figure 186.*

On the map find the parts of the northern plain where the farmers raise large quantities of sugar beets. Germany is the world's greatest producer of sugar beets, and its sugar refineries turn out more beet sugar than those of any other country. *See Figure 187.*

Live stock and dairying. On the farms of the northern plain you will see large numbers of cattle, pigs, and poultry, and many sheep. Since the climate is too cool for corn, the farmers raise carrots, turnips, and other root crops to feed their live stock. They also feed potatoes to their pigs, and beet tops and beet pulp to their cattle.

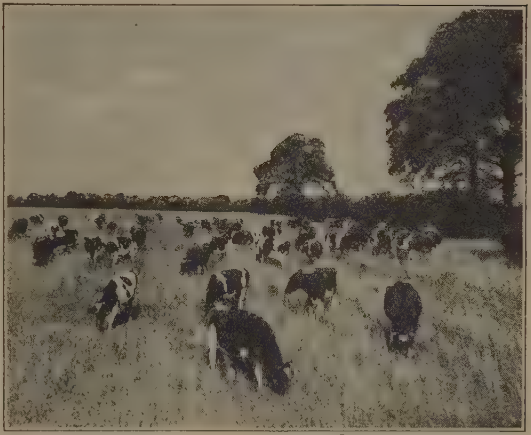


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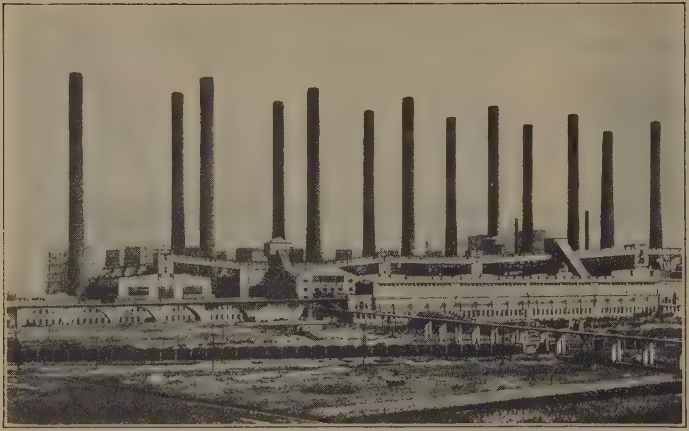
Figure 188. Dairy cows in a pasture in northwestern Germany. What reasons can you give for the fact that this part of Germany is well suited to dairying?

Near all the larger cities there are market gardens and dairy farms, but the principal dairying section is in the northwest. This portion of the German plain is part of the great dairying region of northwestern Europe which extends from western France to southern Sweden. *See Figure 188.*

Small farms and many workers. Because Germany is so densely populated, most of the farms are small, and the need for food leads the farmers to make every acre of land produce all it possibly can. Farm workers are plentiful, for the women and children work side by side with the men in the fields. This is true in all the central European countries.

The growth of cities in the plain. The German plain has a number of cities with more than 100,000 people, and many smaller cities and towns. Most of the cities began as trading centers for the surrounding farm lands. Today they are also manufacturing centers, and in many of them you will find flour mills, sugar refineries, factories for making starch and alcohol from potatoes, and plants for the manufacture of farming tools and machinery. Those that have become railroad centers have many different industries.



International Newsreel Photo

Figure 189. A plant in northern Germany where steam-electric power is made by burning lignite briquets. The plant is near one of the lignite-mining districts, where the fuel can be obtained cheaply.

East Prussia. On the map on pages 140–141 find East Prussia (*S–T1*). Notice that this part of Germany is separated from the rest of the country by a strip of land belonging to Poland and the Free City of Danzig. In general the farms of East Prussia are much larger than those farther west in Germany, and the rich landowners hire the poorer people to work for them.

Rye, oats, and potatoes are the chief crops of East Prussia, and much land is used for pasturing cattle and sheep. The farmers raise flax also, and in several of the towns there are mills for the manufacture of linen goods.

Some things to explain. Give an explanation for each fact stated below:

1. The farmers of the northern plain of Germany do not raise corn. (Remember what kind of weather corn needs while it is growing.)
2. Rye, rather than wheat, is the chief bread grain grown in northern Germany.
3. In spite of rather poor soils the German farmers raise large quantities of foodstuffs per acre.
4. Flour-milling and the manufacture of sugar, starch, and alcohol are important in northern Germany.

Three Great Industrial Districts

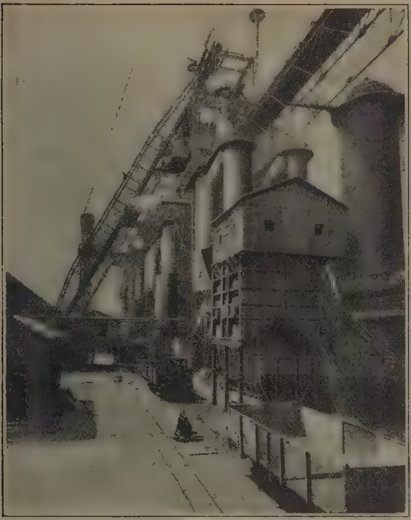
Germany's wealth of coal. On the map on pages 140–141 find the coal fields of Germany. The westernmost one is the richest coal field in Europe, and Germany mines more coal than any other country except the United States. Like Great Britain, Germany has a surplus of coal for export, and its industrial growth has been due in large measure to its wealth of this fuel.

How the Germans use lignite. Besides bituminous coal, Germany has large beds of lignite. This, as you may remember, is brown coal, much softer and poorer in quality than bituminous coal. Most nations make very little use of lignite, but the German scientists have found ways to press it into lumps called briquets, which provide good fuel for making steam power. Much of the steam power used in Germany in the mining and preparation of potash and in the refining of beet sugar is made by burning briquets. What reason for this can you discover from the map?

Large quantities of German lignite are used to make steam power for the manufacture of chemicals and for the making of electricity. In fact, about half of all the electricity used for power in Germany is steam-electric power made with the use of lignite briquets instead of coal. *See Figure 189.*

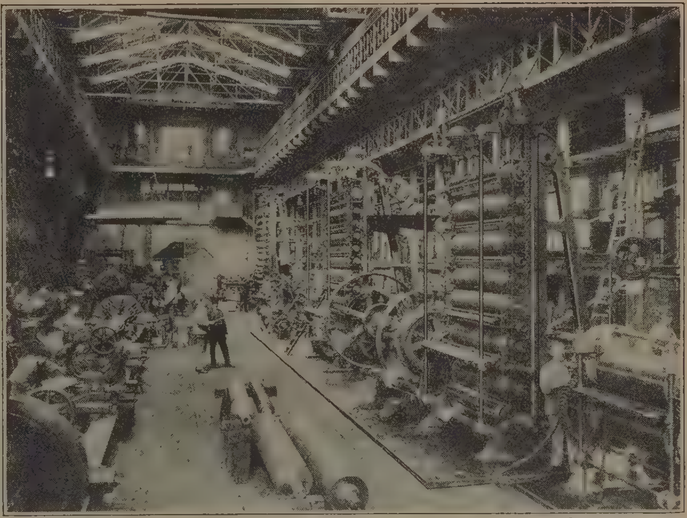
Coal fields and industrial districts. Germany has many manufacturing centers, but its three greatest industrial districts are located on and near the three great coal fields. As you read about each one, locate it on the map on pages 140–141.

The Ruhr district. The best coking coal in Germany comes from the rich coal field in the valley of the Ruhr River, a small tribu-



Courtesy of German Tourist Information Office, N.Y.

Figure 190. Some of the blast furnaces which furnish pig iron for the Krupp iron-and-steel works at Essen.



From Ewing Galloway, N.Y.

Figure 191. A view in one of the Krupp plants. In this plant rolling machinery such as is used in paper mills is manufactured. The Krupp works alone provide work for many thousands of people.

tary to the Rhine. Because of this, the Ruhr Valley, with the neighboring upland, is the great German center for the manufacture of iron and steel.

Farther south in the upland, iron ore is mined, but not nearly enough for all the blast furnaces of the Ruhr district. Large quantities of iron ore come in barges down the Rhine from Lorraine, in France, and additional supplies, imported from Sweden and Spain, come up the Rhine from Rotterdam.

The river ports for this great industrial district are Duisburg and Düsseldorf, on the Rhine. Find them on the map on pages 140–141 (*K3*). For more than 30 miles eastward from these Rhine ports the valley of the Ruhr is crowded with industrial cities and towns. In one section there are 7 miles of almost continuous blast furnaces and iron works, and throughout the entire district there are many steel mills and plants for the manufacture of products of iron and steel. These products vary from all kinds of hardware and cutlery to locomotives, heavy machinery, steel rails, and huge steel plates to be used in building ships.

The largest city of the Ruhr district is Essen, where the huge Krupp iron-and-steel plants are located. Nearly all branches of the iron-and-steel industry are carried on in this city. *See Figures 190 and 191.*

Industrial centers in the Rhine Valley. The abundance of coal in the valley of the Ruhr has led to the growth of many manufacturing centers in the neighboring part of the valley of the Rhine. Many different kinds of manufacturing are carried on, but the textile industries are the most important.

Linen goods are manufactured from flax grown in Germany and Belgium, and large quantities of cotton, woolen, and silk goods are made from raw materials imported through Rotterdam and Antwerp. Crefeld, west of the Rhine, is the leading silk-manufacturing city of Germany. Many kinds of chemicals also are manufactured in this part of the Rhine Valley, and among them dyes for coloring yarn and cloth are very important.

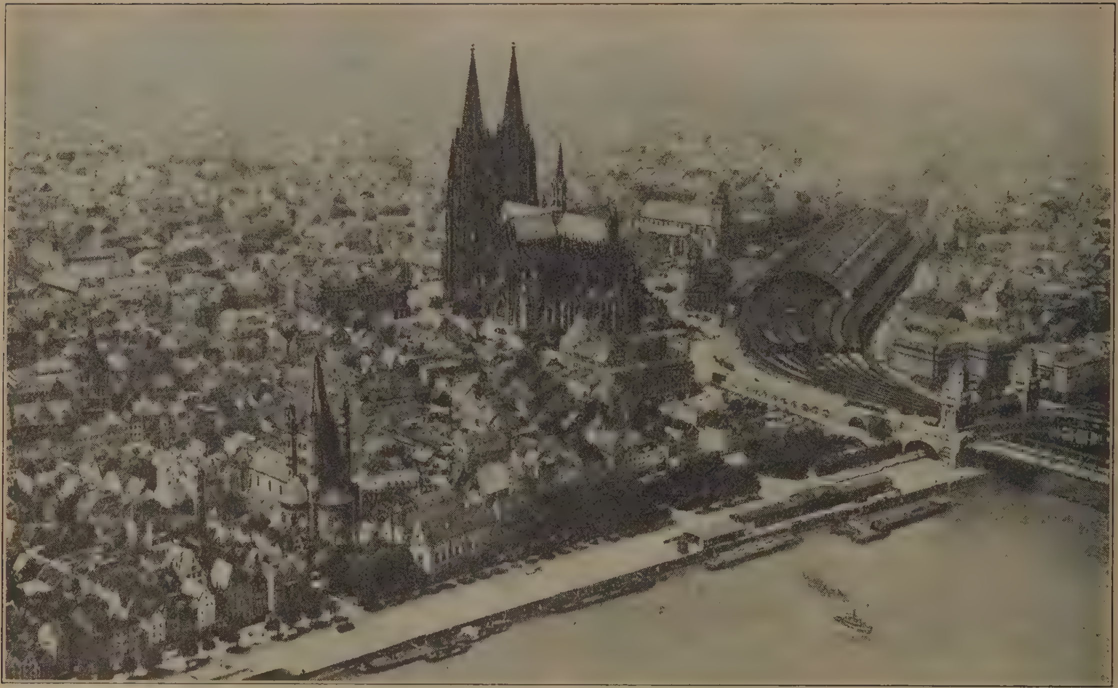


Figure 192. An airplane view of Cologne, showing the cathedral, which is one of the most beautiful churches in Europe. At the right you can see the central railroad station, and in the foreground part of the water front on the Rhine. Besides being a great railroad center, Cologne is one of the leading river ports of Germany.

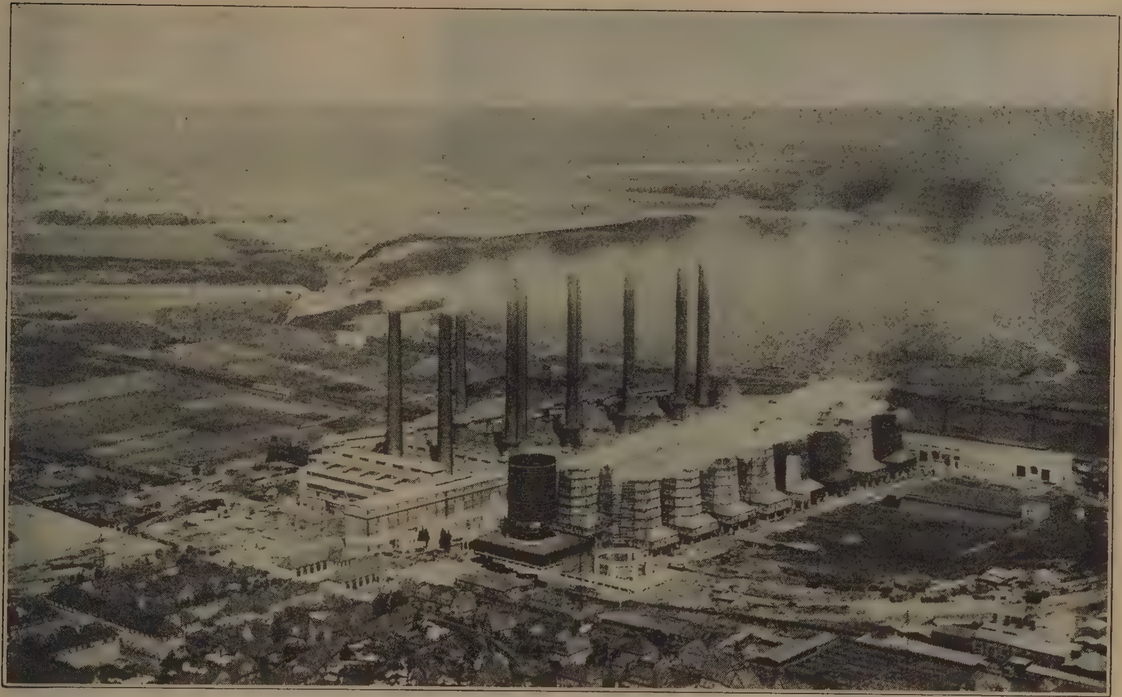
The largest city of the Rhine Valley. Among the industrial cities of the Rhine Valley is Cologne, the third largest city of Germany. Find Cologne on the map on pages 140–141 (*K3*), and notice its location near the place where the Rhine leaves the upland region and enters the plain.

The valley of the Rhine is the principal railroad route through the upland region, and Cologne is the place where railroads from the east, north, and west meet to pass southward. This makes Cologne a great railroad center. It is also a busy river port; and since it is a meeting place for routes of transportation by river and rail, it has become a great business and industrial center. *See Figure 192.*

The Silesian industrial district. On the map on pages 140–141 find the southeastern "tongue" of Germany, between Czechoslovakia and Poland. Here, and in the neighboring part of Poland, there are extensive coal fields and mines where iron ore, lead, and zinc are taken from the earth. Before the World War all this territory belonged to Germany, and because of its coal and metal ores it had become a very important mining and manufacturing district. Two thirds of the coal fields are now in Poland, as well as many of the iron, lead, and zinc mines.

In both parts of the Silesian district, — the German part and the Polish, — there are blast furnaces, steel mills, and factories for the manufacture of machinery and of many kinds of metal goods. Textile industries also are important, especially the manufacture of woolen goods. *See Figure 193.*

On the Oder River, almost in the center of German Silesia, is Breslau, the largest city of southeastern Germany. Because of its location it is an important commercial center



Courtesy of German Tourist Information Office, N.Y.

Figure 193. A plant in German Silesia, where steam-electricity is made by burning coal from neighboring mines and is distributed over wires to various industrial cities and towns. Plants of this kind in Germany also manufacture other valuable products such as tar, fuel gas, and illuminating, or lighting, gas from coal.

and a busy manufacturing city. Coal is obtained easily from the neighboring coal fields, and raw materials come to the city both by rail and by river.

The Saxony industrial district. The third great industrial district of Germany is in the state of Saxony, north of the western end of Czechoslovakia. It has many manufacturing cities and towns, and like the Ruhr district and Silesia it owes its industrial growth largely to its coal fields.

Among the many different manufactures, textiles hold the leading place, and cotton-manufacturing is especially important. The raw cotton, imported chiefly from the United States, comes by rail from the port of Bremen. Chemnitz is the center of the cotton-manufacturing industry but many of the other cities also have cotton mills.

Leipzig and Dresden. The largest cities of Saxony are Leipzig and Dresden. Find them on the map on pages 140–141 (*N3*). Which one is on the Elbe River? The map on pages 144–145 will show you that both of these cities are railroad centers.

Coal is mined near Dresden, and the city is an important manufacturing center, especially for machinery. Dresden china, the best-known product of Saxony, is not made in Dresden, but in a neighboring town. Explain why Dresden is well located for bringing together raw materials and marketing manufactured goods. Then study Figure 194.

Leipzig ranks fifth in population among the cities of Germany. Its central location near the southern margin of the plain makes it a gateway city between that region and the southern uplands, and it is one of the great

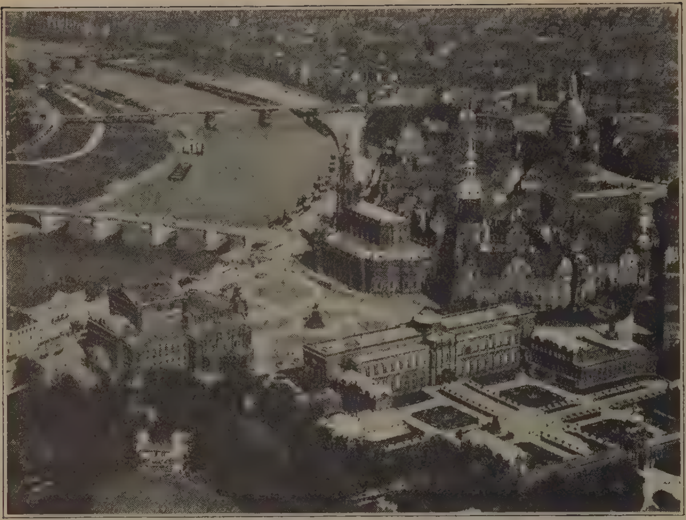


Figure 194. An airplane view of part of Dresden, on the Elbe River. The large building nearest you at the left is the Opera House, and the building at the right of it is a famous museum which contains many beautiful paintings, sculptures, and other works of art. Dresden is one of the great centers of art and culture in Germany.

commercial centers of Europe. Twice each year a great fair is held at Leipzig, and merchants from all over Europe come to this city to display and sell their goods. Leipzig is also the greatest fur market in Europe.

German leadership in making chemicals. In each of the great industrial districts and in many other places in Germany there are factories for making dyes, drugs, medicines, acids, and other chemical products. The Germans are famous for their skill in this kind of work, and they have long been leaders in the chemical industries.

One of the leading chemical industries is the manufacture of dyes from coal tar, which is a product left over in the making of coke from coal. The coal-tar dyes are made in thousands of tints and shades and are exported in large quantities. Other kinds of work closely connected with the chemical industries are the making of nitrate from nitrogen extracted from the air by electricity, and the manufacture of fertilizers.

A coal test. You have learned that Germany's industrial growth is due largely to its wealth of coal. Prove that you understand this statement by completing the sentences below:

1. The three leading coal fields of Germany are in the valley of the ---- River, in -------, and in the state of -------.
2. These fields provide large quantities of ---- suitable for use as fuel for making ----- power and -------- power for manufacturing.
3. In the Ruhr district Germany has large supplies of coal suitable for making ---- for smelting ---- ----.
4. The plants which make coke from coal also furnish ---- --- for use in making ----.
5. In addition to its bituminous coal, Germany has large quantities of ------- which is used for -----.

2. The Valley of the Middle Rhine and the Bavarian Uplands

On the map on pages 140–141 find Cologne (*K3*) again. Trace the Rhine upstream from Cologne to Mainz (*L4*). Through what kind of land does the Rhine flow in this part of its course?

If you should take a boat trip up the Rhine from Cologne, you would first pass through the part of the Rhine Valley which is so narrow and steep-walled that it is called the Rhine Gorge. Figure 195 shows the kind of sights you would see there.

On reaching Mainz you would enter the broad valley of the middle Rhine, where the river flows through a fertile lowland some 15 to 20 miles wide. South of Karlsruhe the part of this valley west of the river is in France. What kind of work do you think you might find the people of this valley lowland doing?

East of the valley lowland are the uplands of Bavaria, so called because Bavaria is the name of the largest state in this part of Germany. Judging from the map, what kind of work do you think is important in this region?

The valley of the middle Rhine. This lowland region is sheltered from cold winds by the bordering uplands and mountains, and therefore spring comes early and the growing season is long. The rich soils and the climate combine to make it one of the best farming regions of Germany.

The sunny hillsides bordering the lowland are covered with vineyards and fruit trees, and the people make wines as famous as those of France. On the lower lands of the valley grain, sugar beets, tobacco, and hops are raised, and many of the farmers keep beef cattle, dairy cows, and pigs.

In the cities and towns of the plain there are creameries, sugar factories, cigar factories, and breweries where barley and hops are used to make beer. Beer is the national drink of the Germans, just as light wines are the national drink of the French.

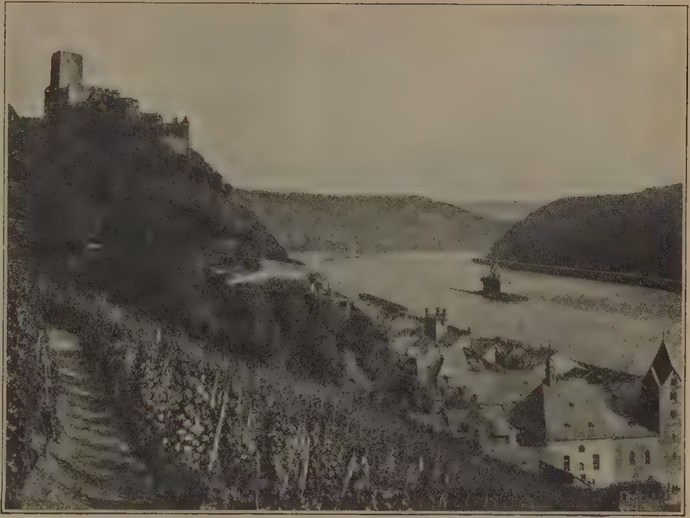

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Figure 195. A view in the Rhine Gorge. In many places the steep slopes are covered with vineyards, and on some of the hilltops there are castles which were built hundreds of years ago.

The largest city of the middle Rhine plain is Frankfurt on Main. Find this city on the map on pages 140–141 (*L3*) and notice its location near the junction of the river Main with the Rhine. Frankfurt is one of the important river ports of Germany, and has large chemical works, breweries, and machine shops. What reason can you discover from the map for its importance as a river port?

The Black Forest. This mountain region lies across the Rhine Valley from the Vosges Mountains of France; and as its name suggests, it has valuable forests. The trees are pines and other softwoods, and lumbering is of considerable importance. The abundance of wood has made this region a center for the manufacture of many small wooden articles, such as toys, wooden clocks, and musical instruments. Much of this work is carried on in the homes of the people. *See Figure 196.*

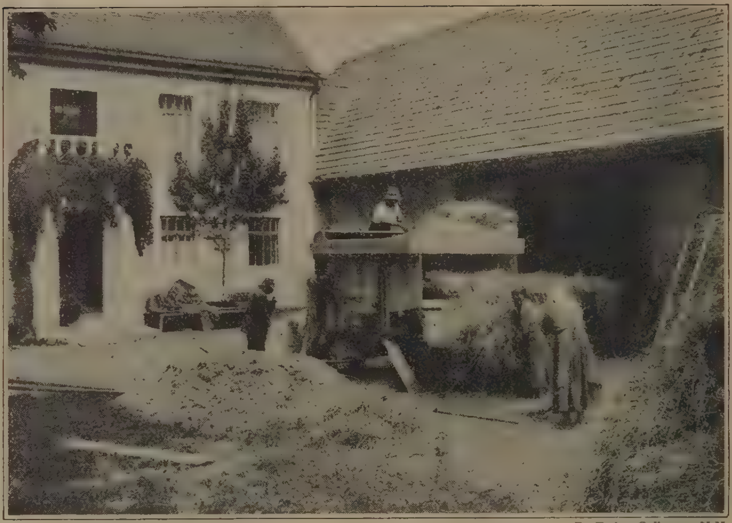
In the valleys of the Black Forest much land has been cleared for farming. The people raise rye, barley, and potatoes and keep cattle, many of which are driven to pastures on the higher mountain slopes to graze in the summer.

In this region, as in the Vosges, there is abundant water power, and this has helped the growth of manufacturing. Among the industries the manufacture of paper and the making of shoes are important. Can you suggest any reasons for this?

Farming in the Bavarian uplands. The Bavarian uplands, with their wooded hills and fertile valleys, are quite different in appearance from the northern plain of Germany. Although their surface is rougher, their soils are better, and the lower parts of the region provide rich farm lands. The greater part of Germany's wheat is grown here, as well as large quantities of rye, oats, and barley. Tobacco and hops are money crops on many of the farms, and vineyards cover the sheltered hillsides along the tributaries to the Rhine. *See Figure 197.*

Courtesy of German Tourist Information Office, N.Y.

Figure 196. A clock-maker in the Black Forest. Have you ever seen clocks like this from Germany?



By Ewing Galloway, N.Y.

Figure 197. Threshing wheat in a farmyard in Bavaria. Notice that the women of the family are helping the men with the threshing. Notice also how neat and well-kept the house and the barn look.

The farmers of this region keep cattle, pigs, and sheep, but cattle are by far the most important. At the south, where the uplands meet the lower slopes of the Alps, there is a rich dairying section.

Advantages for manufacturing. The Bavarian uplands have no coal or metal ores, but, nevertheless, manufacturing is important in all the larger cities and towns. That is partly because the region is densely populated and produces certain valuable raw materials, and partly because of the railroads and waterways which connect it with other parts of Germany and with neighboring countries. Use the map on pages 140–141 to show how coal may be brought to the Bavarian uplands from western Germany by water.

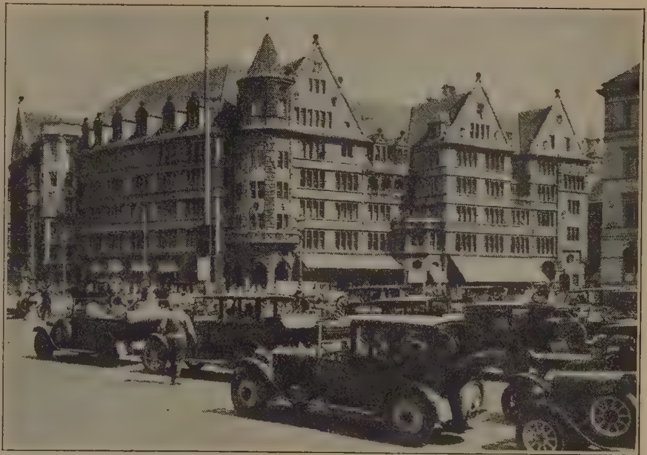
Some important industries. The northeastern part of the uplands has valuable deposits of clay and sand which have led to the manufacture of porcelain and glass. This is the leading glass-manufacturing district of Germany. Glass-making has led, in turn, to the manufacture of fine lenses and all kinds of optical instruments.

In the same part of the uplands toy-making is an important industry. This work began long ago, when all the toys were made by hand from wood obtained from the forests of the region. Today there are many factories where toys of metal as well as of wood are made. Thousands of the toys that fill our shops at Christmas time come from this part of Germany.

The center of the toy-making is the city of Nürnberg, on the canal which connects the river Main, a tributary of the Rhine, with the Danube. Besides its toy factories, Nürnberg has glass works, machine shops, and many factories where optical instruments and fine metal goods are made. The manufacture of jewelry and other metal goods which require much skill is important in several other cities of the region.

Because hops and barley are important crops of Bavaria, this region has many breweries. Among the industries which depend on imported raw materials, cotton-manufacturing is especially important. The center of this industry is the large city of Stuttgart.

Munich. On the map on pages 140–141 find Munich, or München, as the Germans call it (*M4*). In what part of the Bavarian uplands is it located? Munich is the fourth largest city of Germany, and the great railroad and commercial center of the southern part of the country. To the people of other countries, however, it is best known, not for its business and industry but for its wonderful art collections.



By Ewing Galloway, N.Y.

Figure 198. A crowded street corner in the shopping district of Munich. The large building in the picture is the leading department store of the city. Besides being a great business center, Munich is a manufacturing city. Can you explain why?

In order to understand the growth of Munich, find the Brenner Pass through the Alps on the map on pages 140–141 (*M5*). Notice that Munich is directly north of it. Through this pass runs the main railroad line from Berlin to Rome, the capital of Italy.

Find the railroad from Berlin (*H5*) to Rome (*H7*) on the map on pages 144–145. Find, also, the main east-west railroad which connects Paris (*F6*) with Vienna (*J6*). Notice that these two railroad lines cross at Munich. Notice also that other railroads meet the one from Berlin at Munich to cross the Alps by way of the Brenner Pass. You can see now that the location of Munich has made it a great railroad center, and from what you know of other railroad centers you should be able to explain why it has become the largest city of southern Germany and one of the great cities of Europe. *See Figure 198.*

Some lists to make. Below is a list of some of the important products manufactured in the regions of southern Germany which you have just been studying. Divide them into two lists: (1) those made with the use of raw materials produced in that part of Germany, and (2) those made with the use of raw materials from outside.

wooden toys
glass
jewelry
cotton goods
metal toys
butter
porcelain
machinery
cigars

3. Berlin and the German Seaports

The two largest cities of Germany are Berlin, the capital, and Hamburg, the leading seaport. Find these two cities on the map on pages 140–141 (*N2, M2*). In what region is Berlin located? Between what two important rivers? On which of these rivers is Hamburg located? Find the other two important German seaports. On what rivers are they located?

A modern city. American travelers in Europe are often surprised to find that Berlin looks very new compared with London and Paris. They miss the narrow, crooked streets and the quaint old buildings of those cities, for Berlin is more like the cities at home.

Berlin is not a young city, for the first settlement was made several hundred years before the discovery of America. But it grew more slowly than London or Paris, and it did not become a really great city until after it was made the capital of Germany, in 1871. The reason it looks so modern is that many of its public and private buildings have been erected in the last fifty years. Before you read further, study Figure 199.

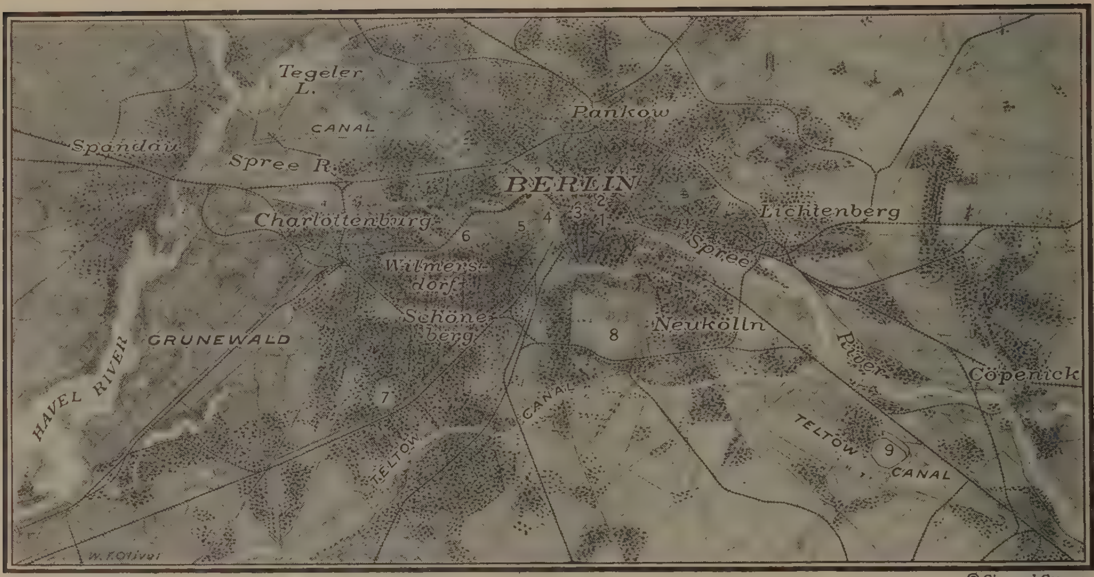


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Figure 199. A relief map of Berlin and its surroundings. The numbers show the locations of the following places of interest: 1, the former royal palace, now a museum; 2, the National Gallery, containing paintings and sculpture; 3, the University of Berlin; 4, Unter den Linden (a boulevard); 5, the Tiergarten (a beautiful wooded park); 6, Zoölogical Garden; 7, Botanical Garden; 8 and 9, landing fields for airplanes.

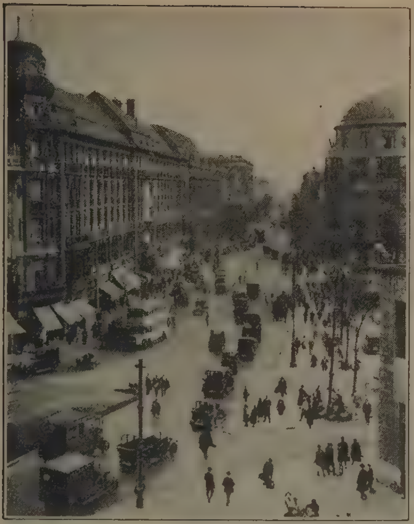
Today Berlin has over four million people and is the third largest city in the world. Although it has more people than Paris, it seems much less crowded; for it covers about ten times as much area. Many people find Berlin less interesting than London and less beautiful than Paris, but everyone admires its magnificent buildings, its broad, smoothly paved streets, and its parks, gardens, and well-kept homes. *See Figure 200.*

The center of the city is a little island in the river Spree. On this island are the former emperor's palace and several other public buildings. The palace has been turned into a museum since Germany became a republic. Leading westward through the city from the island is the famous avenue known as "Unter den Linden." It is bordered by trees and grass-plots and is divided into two broad highways which provide ample space for the automobiles that speed along it from early morning till late at night. *See Figure 201.*

The location of Berlin. The map shows that Berlin is located about halfway between the Baltic Sea and the upland of Saxony, and also about halfway between the Elbe and Oder rivers. Canals connect the Spree with the Elbe and the Oder, giving Berlin transportation by water to the ports of Hamburg and Stettin.

Although Berlin benefits by its waterways, it owes its growth much more largely to its railroads. The map on pages 144–145 will show you that it is the hub of Germany's railroad system and that it is one of the great railroad centers of Europe. Figure 125 (p. 128) shows that it is also the hub of a system of airplane routes which connect it with all the larger cities of the continent.

A great manufacturing center. With its large population, its nearness to the seaports, and its railroad connections with all parts of Europe, it is natural that Berlin should have become a great manufacturing center. It



By Ewing Galloway, N.Y.

Figure 200. One of the broad, smoothly paved streets in the heart of the business section of Berlin.

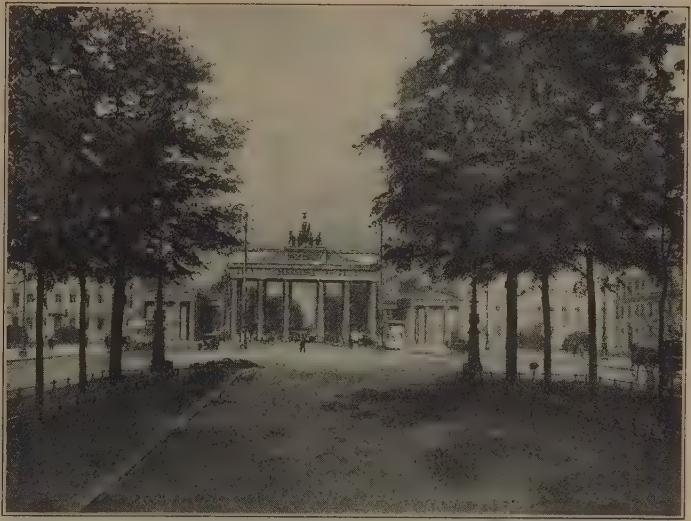


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Figure 201. Looking down Unter den Linden toward the Brandenburg Gate in Berlin. The Brandenburg Gate leads into the Tiergarten, the largest of the many beautiful parks in Berlin.

turns out a great variety of products, and many thousands of people find work in its mills and factories. Among its more important manufacturing plants are factories for making many kinds of machinery, textile mills, clothing factories, shoe factories, paper mills, chemical plants, and glassworks.

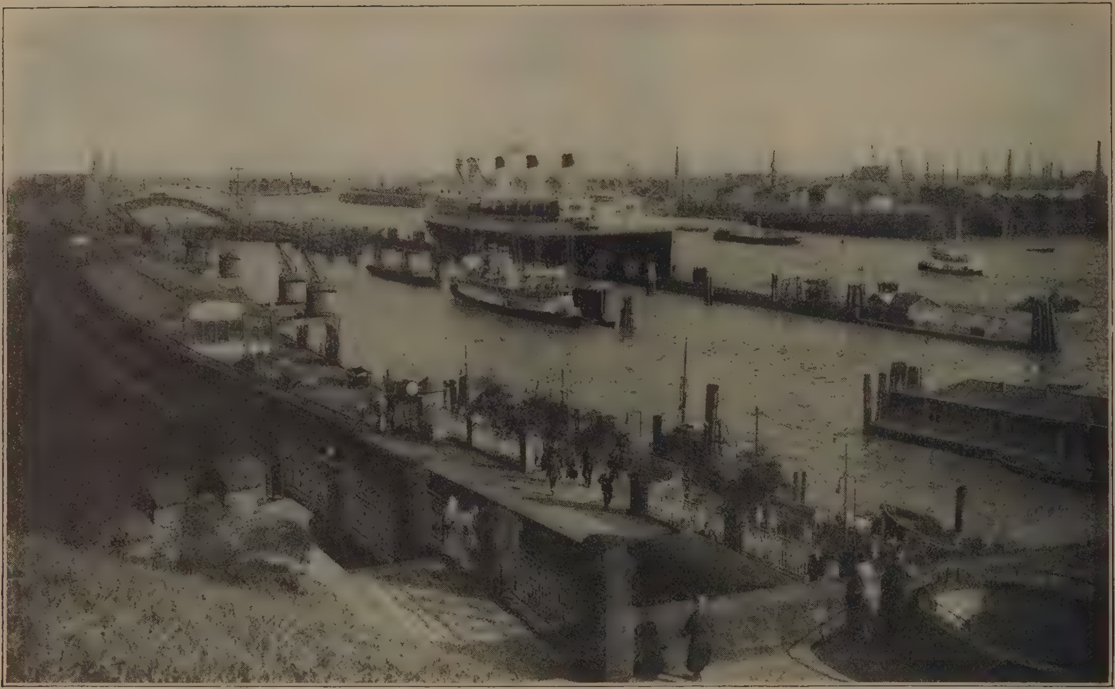
The location of the German seaports. You already know that Germany controls the mouths of three of the navigable rivers of central Europe. At the heads of the estuaries of these rivers stand the leading German seaports: Hamburg on the Elbe, Bremen on the Weser, and Stettin on the Oder. Turn to the map on pages 140–141 and study their locations (*L–M2* and *O2*).

Vast quantities of goods move to and from these seaports in barges on the rivers, and each port is well supplied with railroads. In a general way each port serves its own river basin; but of the three, Hamburg attracts by far the greatest amount of foreign trade, and is one of the very great seaports of the world. *See Figure 202.*

Why Hamburg leads. Bremen is somewhat handicapped by the fact that the Weser does not flow through any great industrial district. A canal connects the Weser with the Ruhr district, but that does not greatly increase Bremen's trade, because the Rhine is the natural river outlet for the Ruhr.

Stettin has the advantage of being the nearest seaport to Berlin and the natural gateway for the Silesian industrial district of Germany and Poland. It suffers somewhat, however, from its location on the Baltic Sea. The Kiel Canal greatly shortens the distance between the Baltic and North seas; but even so, ships from distant lands take from one to two days longer to reach Stettin than to reach Hamburg or Bremen.

The map will show you the advantages which Hamburg has over Bremen and Stettin. Because of its location at the mouth of the Elbe this port is the ocean gateway for the trade of two great industrial districts: Saxony in Germany, and the Bohemian Plateau of Czechoslovakia. Furthermore, the Elbe is



By Ewing Galloway, N. Y.

Figure 202. Part of the harbor of Hamburg. At this great German port you will see all kinds of boats: river barges and steamers, coastal steamers, and ocean freighters and liners. The large ship in the picture is a passenger liner which runs between Hamburg and ports on the east coast of South America.

connected by canals with Berlin and the Oder River. Because of this and the fact that Hamburg is a North Sea port, it handles much of the foreign trade of the German capital and some of the foreign trade of German Silesia.

Harbor sights. At each of the German ports there are miles of wharves and docks along both sides of the river, and large ocean ships are continually coming and going, bringing in cargoes from distant lands and carrying away huge quantities of German products. Many of the ships are from the United States, for the Germans buy more from us than from any other country, and we, in turn, are excellent customers for German goods.

The Germans own and operate a number of large passenger-steamship lines, and both Hamburg and Bremen are ports for transatlantic liners.

Manufacturing at the seaports. Like all great seaports, Hamburg, Bremen, and Stettin are great manufacturing centers also. Germany's shipbuilding industry, which is very large, is centered in these ports, and there are many plants for making machinery, ships' engines, and chemicals. Imports of raw materials from distant lands have led to the growth of textile industries, such as cotton-manufacturing at Bremen, jute-manufacturing at Hamburg, and woolen-manufacturing at Stettin.

German trade. You have now learned enough about Germany to know that it is first of all a great manufacturing country. What, then, do you expect its chief exports and imports to be? Check your answer by the map on pages 140–141.

After studying the map, you will not be surprised to learn that about three fourths of all Germany's exports are manufactured goods, and that nearly half its imports are raw materials. This will remind you of the trade of Great Britain. Like that country, Germany seeks raw materials for its industries and markets for its manufactured goods in all parts of the world. Germany buys foodstuffs also from other countries but not such large quantities as Great Britain does. Explain why.

It is often said that Germany is surrounded by a ring of markets. That will suggest to you the fact that Germany's neighbors in Europe are among its best customers for manufactured goods. Among them Great Britain, the Netherlands, Czechoslovakia, and Switzerland buy the largest quantities of German exports. They play a much smaller part in Germany's import trade, for they are not large producers of the raw materials that Germany needs most. Our own country leads in supplying Germany's imports, and is followed by Argentina.

A check. Turn back to page 190 and read over the questions at the end of the first column. You should be able to answer them now.

1. In answering the first question, tell (1) what important raw materials for certain of their industries the Germans produce in their own country; (2) what advantages the Germans have for getting raw materials from other countries, both near and far; (3) what mineral resources they have which provide power for the mills and factories; (4) why they have no trouble in getting factory workers; (5) what advantages they have for marketing manufactured goods at home and in other countries.

2. In answering the second question, tell (1) what advantages of surface and climate Germany offers for agriculture; (2) how the German farmers manage to get such large crops from their land.

3. In answering the third question, name (1) the two classes of goods which the Germans import in largest quantities; (2) the class of goods which they export in largest quantities.

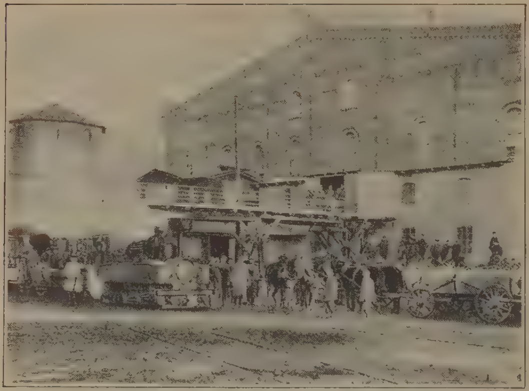
A list to make. Write down the names of the cities described below. When you have finished, you will have a list of the eight largest cities of Germany.

1. The capital of Germany.
2. The leading seaport of Germany. Ham
3. The great river port and railroad center on the Rhine. Cologne
4. The important railroad center in Bavaria. Mu
5. The commercial city in Saxony where a great fair is held twice a year.
6. The city in Saxony which has given its name to a famous kind of German china.
7. The leading city of German Silesia.
8. The largest of the iron-and-steel manufacturing cities in the Ruhr Valley.

Giving reasons. Complete each sentence below by giving reasons for the fact which it states.

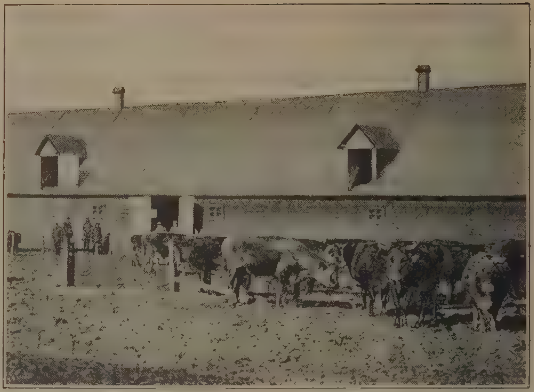
1. Farming is a very important kind of work in the northern plain of Germany because ____
______________________________________.
2. German farmers are able to buy fertilizers at reasonable prices because ______________.
3. The leading industrial districts of Germany are in the uplands bordering the northern plain because ______________________________.
4. Lignite plays a much greater part in manufacturing in Germany than in any other country because ______________________________.
5. Toy-making is an important kind of work in Bavaria because ______________________.
6. Berlin is a great manufacturing center because ______________________________.
7. Hamburg is the leading seaport of Germany because ______________________________.
8. Shipbuilding and textile-manufacturing are important at the German seaports because ____
______________________________________.
9. Part of the foreign trade of Germany is carried on through the Dutch port of Rotterdam because ______________________________.

Special credit work. See how many things you can find at home marked in such a way that you know they were made in Germany. Perhaps you can interest a group of your classmates in getting together a collection of German-made articles for a classroom exhibit.



From Ewing Galloway, N.Y.

Figure 203. Unloading sugar beets at a sugar factory in Poland. Poland, like Germany, has many factories where sugar is made from sugar beets from the farms.



From Ewing Galloway, N.Y.

Figure 204. Cattle in a farmyard in Poland. Why are the crops and live stock raised in northern Poland like those raised in the northern plain of Germany?

III. POLAND AND CZECHOSLOVAKIA

Foreword. Poland and Czechoslovakia are two of the "new" European countries which became independent at the end of the World War. For many years before the war Czechoslovakia had been part of Austria-Hungary, and Poland had been divided between Germany, Austria-Hungary, and Russia. Both countries are now independent republics.

Find Poland and Czechoslovakia on the map on pages 140–141. How do they compare in size? Which one has more land suitable for farming? Which one appears to have more mineral wealth?

Although Poland is nearly three times as large as Czechoslovakia and has about twice as many people, its foreign trade amounts to little more than half that of Czechoslovakia. Judging from this, which country do you think is making fuller use of its resources?

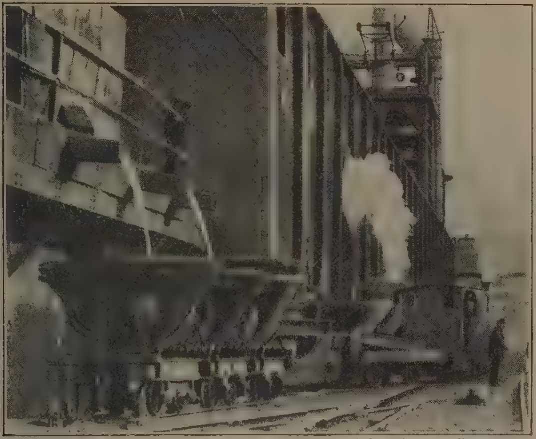
A note about names. As you continue your study of the countries of central Europe and then go on to study the countries of southern Europe, you will find many cities referred to by two names, as, for example, Prague (Praha). In every case the first name is the one we commonly use, while the second, in parenthesis, is the name used by the people of the country themselves. It is well to know the national names as well as the names we commonly use; for the national names sometimes appear in our newspapers, and they should always be used in directing letters to foreign countries.

POLAND — GERMANY'S NEIGHBOR ON THE EAST

Farming in Poland. If you travel east from Berlin to Warsaw, you will find that rye, oats, potatoes, and sugar beets are the leading crops on the Polish plain, just as they are on the German plain, and that the Polish farmers keep cattle, pigs, and poultry, just as the German farmers do. *See Figures 203 and 204.*

You will find fewer small farms in Poland than in Germany, for more of the land is in large estates belonging to rich landowners who hire the Polish peasants to work for them. This is unfortunate; for the owners leave much of the land uncultivated, and hired farm-workers take less interest in getting the best from the soil than small-farm owners do.

If you travel all the way across Poland, you will find the farms in the eastern part less prosperous than those in the west. That is because before the World War the Germans



Photograph from Ewing Galloway, N.Y.

Figure 205. A view at one of the steel plants in Polish Silesia. The liquid pouring from the troughs into the vats on the flat cars is white-hot steel.

owned the western part, and they had introduced their careful methods of farming. The Russians, who owned the eastern part, had done little to improve farming methods there.

In Poland, as in Germany, the southern uplands are important farm lands. Most of Poland's wheat lands are in this part of the country because the soils are richer than on the northern plain. Large quantities of flax also are raised in this region, both for the fiber and for the seed. From the western part of the plain and from the southern uplands live pigs and poultry and various other farm products are exported across the boundaries of Poland to Germany and Czechoslovakia.

More than half of all the workers of Poland are farmers, and farming is more important than any other kind of work. In spite of this, Poland is a less important farming country than Germany, where so many people are engaged in manufacturing. The Poles realize that to be as successful as the Germans in agriculture they must break up the great estates into small farms, make more of the peasants farm-owners, and adopt better farming methods. This work has already begun, and it promises to increase Poland's prosperity greatly.

Poland's forests. In the northeast and in the southern uplands Poland has valuable forests which provide most of the wood used in the country and furnish much lumber and pulp wood for export. These forest products find excellent markets farther west in Europe, especially in Great Britain and Germany. Explain why.

Mineral wealth. As you know, Poland shares with Germany the rich Silesian district, with its coal, iron ore, zinc, and lead. So many of the Silesian mines are now in Poland that this country stands high among the European countries in the production of zinc, lead, and coal. Furthermore, in Silesia Poland now has many blast furnaces, steel mills, and zinc smelters which were formerly in Germany. *See Figure 205.*

Another source of mineral wealth in Poland is the petroleum which is found in the Carpathian region. Near the oil fields there are many refineries, and about half their output of mineral oils is exported. *See Figure 206.*

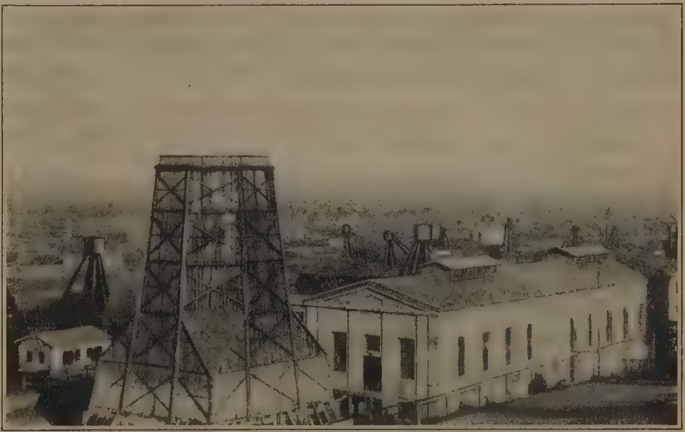
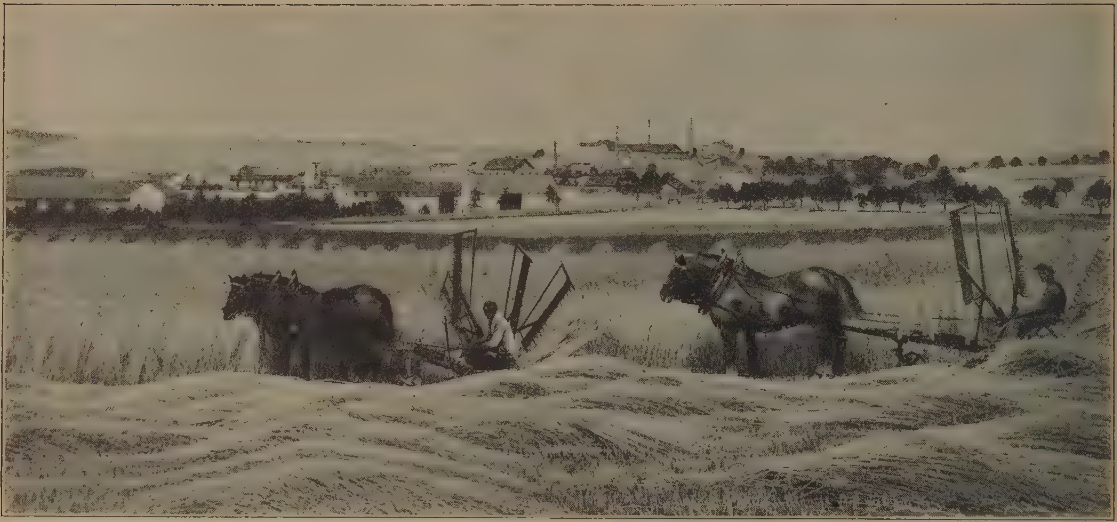


Figure 206. A power plant at one of the oil fields in Poland. In this plant steam-electricity made by burning fuel oil is used to provide power for pumping oil from the wells.



Photograph by Ewing Galloway, N. Y.

Figure 207. Harvesting grain in the Bohemian Plateau of Czechoslovakia. The men are using machines which mow the grain and leave it lying on the ground. Other workers gather up the grain, tie it in bundles, and stack the bundles in shocks to dry in the sun. Notice the broad stretch of cultivated fields in the distance.

In the same part of the country there are valuable deposits of rock salt which have been mined for hundreds of years. Potash salts have also been discovered here, and are being mined in greater quantities each year.

Work in the cities of Poland. On the map on pages 140–141 find Warsaw (Warszawa), the capital and largest city of Poland (*S2*). Notice its central location on the Vistula River. The map on pages 144–145 will show you that Warsaw is also the center of Poland's railroad system. Because of its railroads and its outlet to the sea by way of the Vistula, Warsaw is an important commercial and industrial city. Among its manufactures machinery, leather, and textiles are important.

Turn to the map on pages 140–141 again and find Lodz (*R3*), Lemberg (Lwow) (*U4*), and Krakow (*S4*). These cities are all important manufacturing centers. Lodz is Poland's leading cotton-manufacturing city. Krakow uses iron and steel from the Silesian district for the manufacture of machinery. Lemberg, in the southeast, has many small industries, among which the making of linen goods from flax that is grown close by is very important.

Poland's trade. The map shows that Poland is almost cut off from the sea by East Prussia and the area belonging to the Free City of Danzig. Since Danzig, at the mouth of the Vistula, is the natural ocean gateway for Poland, most of Poland's foreign trade by water has long passed through that port. But now that the Poles are independent, they want a port within their own boundaries, and they are developing Gdynia, just north of Danzig, for that purpose.

From the map (pp. 140–141) tell what kinds of work furnish the leading exports of Poland. What imports show that textile-manufacturing is important in Poland? that Poland's iron-and-steel industries do not fully supply the needs of the people?

The greater part of Poland's trade is with other countries of Europe, especially with Germany. For this reason much of its foreign trade is carried on by means of the railroads and the inland waterways.

THE COUNTRY OF THE CZECHS AND SLOVAKS

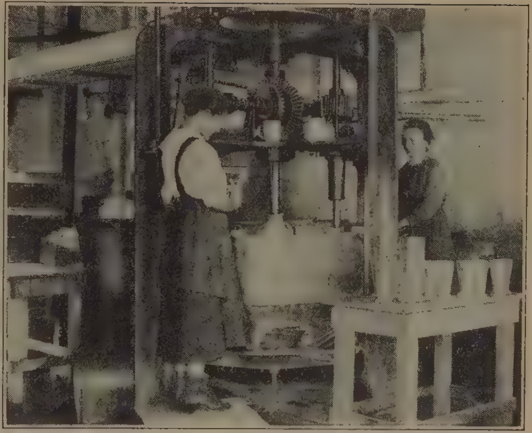
Czechoslovakia. In studying the map you must have noticed what a strangely shaped country Czechoslovakia is. The western part of the country is the land of the Czechs, and the eastern part is the land of the Slovaks. After the World War these two groups of people united to form a single nation, and they called their country Czechoslovakia.

This union brought together under one government the Bohemian Plateau, the Moravian corridor, and the mountainous region of Slovakia. Find these three parts of Czechoslovakia on the map on pages 140–141. The Moravian corridor is the strip of upland in the central part of the country.

Farming in the Bohemian Plateau. The map shows that the Bohemian Plateau is an upland surrounded by a ring of old, worn-down mountains. The streams that rise on the inner slopes of the mountains flow toward the center of the plateau, where they join to form the Elbe River. The broad valleys of the streams have rich soils which make the plateau an important farming region. The farmers raise excellent crops of rye, oats, barley, wheat, potatoes, and sugar beets, and keep many cattle and pigs. *See Figure 207.*

A great industrial region. About two fifths of all the workers in the Bohemian Plateau are engaged in manufacturing, for this region is one of the busiest industrial districts of central Europe. What reasons for this can you discover from the map?

The abundance of coal in the plateau has led to the development of many kinds of manufacturing. Most important of all are the textile industries, for which large quantities of cotton, wool, silk, and flax are imported. Large quantities of hides and skins also are imported, and the making of shoes and gloves is very important.



Photograph from Ewing Galloway, N.Y.

Figure 208. In a Czechoslovakian glass factory. The women are working at a machine which shapes glass cups. Notice the drinking glasses on the table.

The iron ore mined near the coal fields has helped the growth of iron-and-steel industries, and additional supplies of iron and steel are purchased from other countries for use in the factories which manufacture machinery and other products of these metals.

Many raw materials produced in the plateau itself and the neighboring mountains also help to make this region a great industrial district. The forest-covered mountains supply pulp wood for the manufacture of wood pulp and paper, and the farms supply large quantities of sugar beets for making sugar.

Valuable deposits of clay provide the raw material for making porcelain ware, and beds of sandstone provide sand for the manufacture of glass. Bohemian glassware is famous for its beauty of color and design, and finds markets in many parts of the world. Perhaps you have seen some of it, for it is sold in many of our stores. *See Figure 208.*

The Moravian corridor. The narrow belt of land known as the Moravian corridor is a small but important part of Czechoslovakia. Like Bohemia, it is an agricultural and industrial region because it has fertile farm lands and good coal fields.

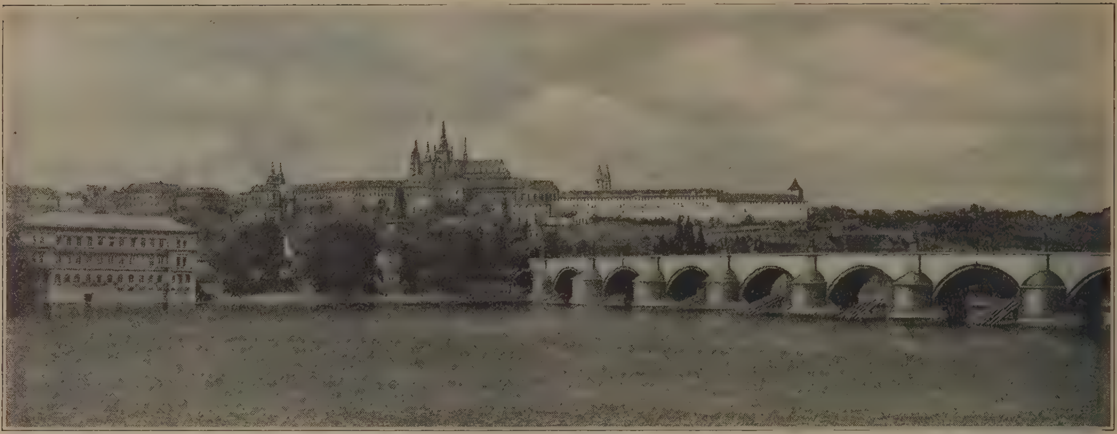


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Figure 209. A view of Prague. In this picture you are looking across the river toward the fine old palace, built long ago when Bohemia was an independent kingdom, and now used for the government offices. Towering above the walls of the palace is the cathedral, the most beautiful church in Czechoslovakia.

The coal at the northern end of the corridor has led to the growth of an important iron-and-steel industry. The coal mined in the south has helped to make Brünn (Brno) a busy manufacturing city, with textile mills and factories for making machinery, leather goods, porcelain, and glass. Find Brünn on the map on pages 140–141 (*P4*). It is the second largest city of Czechoslovakia.

Slovakia. East of the Moravian corridor is Slovakia, the part of Czechoslovakia which lies mostly in the Carpathian Mountains. In many ways this is a rich region, but it is not nearly so well developed as the rest of the country. That is partly because it is so mountainous and partly because the Slovaks are mostly simple peasants. The Czechs are well educated and skilled in many kinds of work, and they have made much greater use of their resources than have the Slovaks.

The mountains of Slovakia are covered with valuable forests, and lumbering is of some importance. The region is known to be rich in iron and other metal ores, but as yet mining is carried on only in a few places and on a small scale.

Most of the Slovaks are farmers. The best farm lands are in the parts of the Plain of Hungary which extend into Slovakia, but there are also many farms in the valleys among the mountains. Foodstuffs produced here help to feed the people in the industrial districts of Bohemia and Moravia.

Prague (Praha). The capital of Czechoslovakia is the fine old city of Prague, on the Moldau River, which is tributary to the Elbe. Find Prague on the map on pages 140–141 (*O3*). What reason can you give for the fact that the capital of Czechoslovakia is in Bohemia rather than farther east?

Prague is the railroad center of Bohemia and has an outlet to the sea by way of the Elbe River. Because of its central location in the busiest part of Czechoslovakia it is the largest city and the great commercial center of the country. *See Figure 209.*

Raw materials from distant lands come to Prague from Hamburg by way of the Elbe and are distributed to other parts of the country, and manufactured products from Czechoslovakian mills and factories are collected here for export. Among the manufacturing plants in Prague itself are cotton mills, machine shops, glass factories, and chemical works.

Czechoslovakia's trade. The exports and imports of Czechoslovakia show clearly how greatly the people depend on manufacturing. Among the imports raw cotton and wool are by far the most valuable, and many other raw materials are imported. Wheat and other foodstuffs also are purchased from other countries, showing that although farming is well developed in Czechoslovakia, the people need more food than they produce. By far the most important exports are textiles, followed by iron and steel goods, refined sugar, glassware, and shoes.

For a landlocked country Czechoslovakia has unusual advantages for trade. It extends east and west for 600 miles through central Europe, and is crossed by several of the main north-south railroads of the continent. These railroads, with others that run east and west, connect it with all parts of Europe. Although it has no seacoast, its location is such that it can use three of the internationalized rivers: the Elbe leading to the North Sea, the Oder leading to the Baltic Sea, and the Danube leading to the Black Sea. *See Figure 210.*

Much of Czechoslovakia's trade is with the neighboring countries, but it obtains from many distant lands raw materials for its textile and leather industries. Our own country supplies part of the raw cotton, and in return purchases Czechoslovakian textiles and glass.

Naming cities. 1. Give the name which we commonly use for each of the following cities:

Brno Praha Warszawa Lwow
Brunn

2. Complete each sentence below correctly:

a. Praha, the capital of Czechoslovakia, is located in the Plateau of Bohemia

b. Warsaw, the capital of Poland, is located on the Vistula River.

c. Brno is the second largest city of Czechoslovakia.

d. Lwow is the largest city in southeastern Poland.

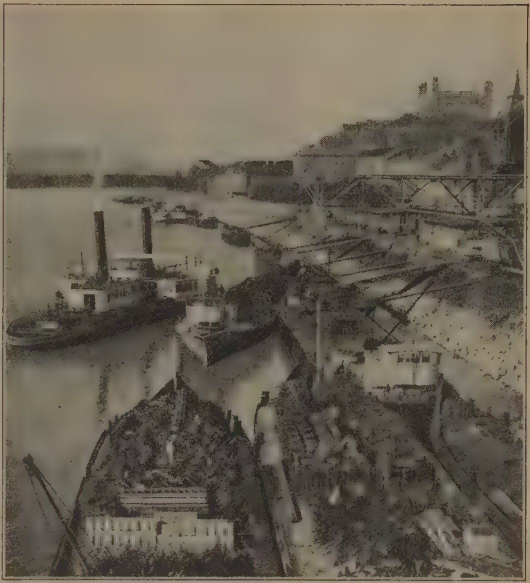


Figure 210. A view of the water front at Bratislava, Czechoslovakia's river port on the Danube. Find Bratislava on the map on pages 144–145 (*J6*) and show how barges reach this port from the Black Sea.

Giving reasons. Complete each sentence below by giving reasons for the fact which it states.

1. There are more and better farms in the western part of the plain of Poland than in the eastern part because ____________________.

2. Poland's wheat lands are largely in the southern uplands because ______________.

3. Poland profited greatly by obtaining part of Silesia because ____________________.

4. The Carpathian region is valuable to Poland because ______________________.

5. The Bohemian Plateau is well suited to farming because _____________________.

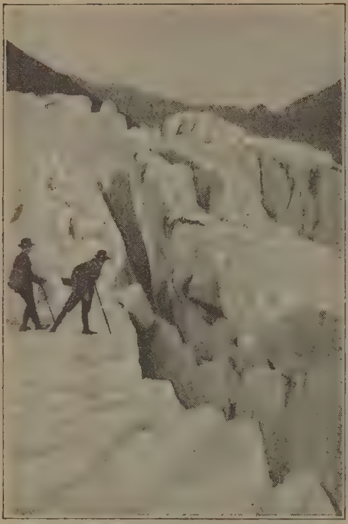
6. The Bohemian Plateau is one of the great industrial regions of Europe because ________.

7. Both Poland and Czechoslovakia have many sugar factories because ____________.

8. Glassware is one of the important manufactures of Czechoslovakia because ________.

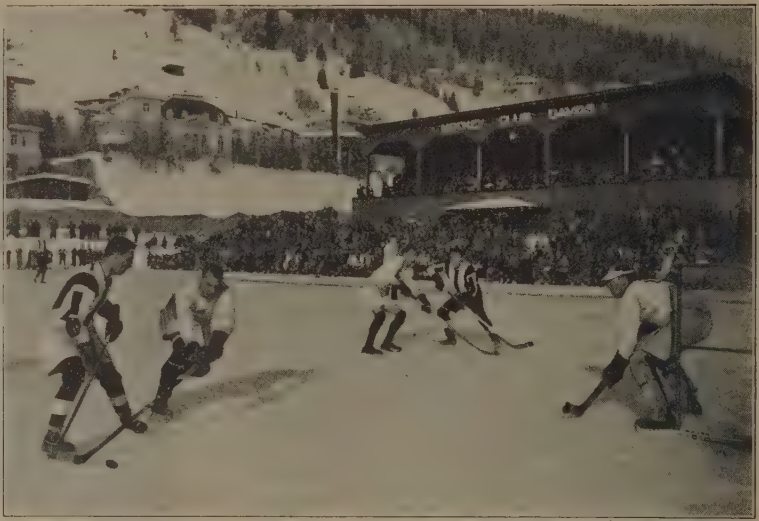
9. For a landlocked country Czechoslovakia has unusual advantages for trade with distant lands because ________________________.

10. The Poles are building wharves, docks, and warehouses at Gdynia because _________.



Courtesy of Swiss Federal Railroads

Figure 211. Mountain-climbers looking into a deep crevasse, or crack, in a glacier in the Swiss Alps.



Courtesy of Swiss Federal Railroads

Figure 212. A hockey match at Davos, one of the famous winter resorts in Switzerland. At these resorts the skating rinks are lighted by electricity at night, and workmen keep the ice in perfect condition night and day.

IV. SWITZERLAND, AUSTRIA, AND HUNGARY

Foreword. On the map on pages 140–141 find the small inland countries of Switzerland, Austria, and Hungary, and compare their surface. What striking difference do you find between Hungary and the other two countries?

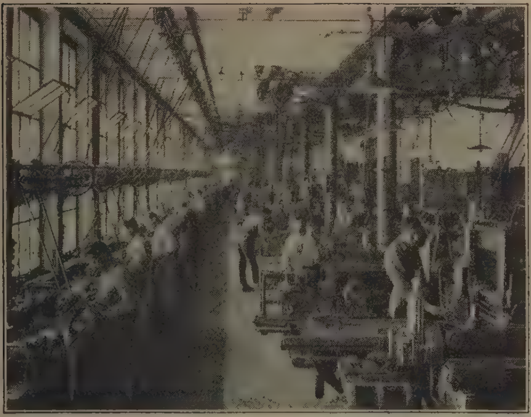
Switzerland has been an independent country for several hundred years, and at present it is much more prosperous than Austria or Hungary. Do you know of any reasons for its prosperity? Be on the watch for them as you study this section.

Austria and Hungary have been independent only since the World War. They are about the same size, but in surface and resources they are almost exact opposites. Which of them do you think is an agricultural country? Judging from the map, what kinds of work do you think are important in the other country?

Life in the high Alps. The people of the high Alps of Switzerland and western Austria have very small farms in the valleys and on the lower mountain slopes, and they depend chiefly on dairying. One or two of the men or older boys in each family take the cows to the high pastures above the tree line to graze during the summer. While they are there they make butter and cheese, and send them down to the valleys to be sold.

In the meantime those who remain on the farms are busy raising forage crops and cutting hay to feed the cows during the long, cold winter, when the ground is covered with snow. In the autumn the herdsmen return from the mountain pastures with the cows, and the out-of-door farm work is over for the year.

These mountain people usually spend the winter months doing some kind of handwork. Many of the men carve toys and small ornaments of wood, and many of the women make laces and embroideries. Most of these articles are beautifully made, and their sale adds considerably to the income of the people.



Courtesy of Swiss Federal Railroads

Figure 213. In a watch factory in Switzerland. Swiss watches are well known the world over, and thousands are sold each year in our own country.

A world playground. The Alps attract large numbers of visitors from all over the world, both in summer and in winter. These rugged mountains, with their forest-clad slopes, their sharp, rocky peaks, their glaciers and waterfalls, provide some of the most wonderful scenery in the world, and this alone brings thousands of people to the Alps. In summer many of the visitors come to tramp over the glaciers and climb the mountain peaks. In the winter the Alps become a great playground for people who enjoy skating, skiing, sleigh-riding, and tobogganing. *See Figures 211 and 212.*

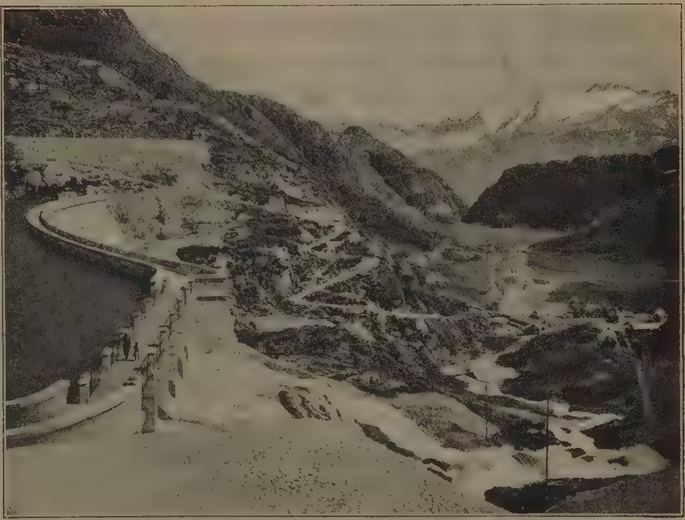
Many hotels have been built to house the visitors, and thousands of people in Switzerland and Austria make part or all of their living by caring for the needs and wants of the guests. The visitors also provide much business for the railroads, the motor-bus companies, and the shops and stores.

A manufacturing country. Switzerland is too mountainous to be an important farming country; and since it has no coast line, the people cannot turn to the sea as the Norwegians have done. So, although they have almost no coal or iron ore, the Swiss have found ways to become a manufacturing nation.

To make up for the lack of coal, the Swiss use their swift-flowing mountain streams to make electricity for light and power. Few raw materials are produced in the country, and so the Swiss specialize in the manufacture of products which require much skill in the making rather than large quantities of bulky raw materials. *See Figures 213 and 214.*

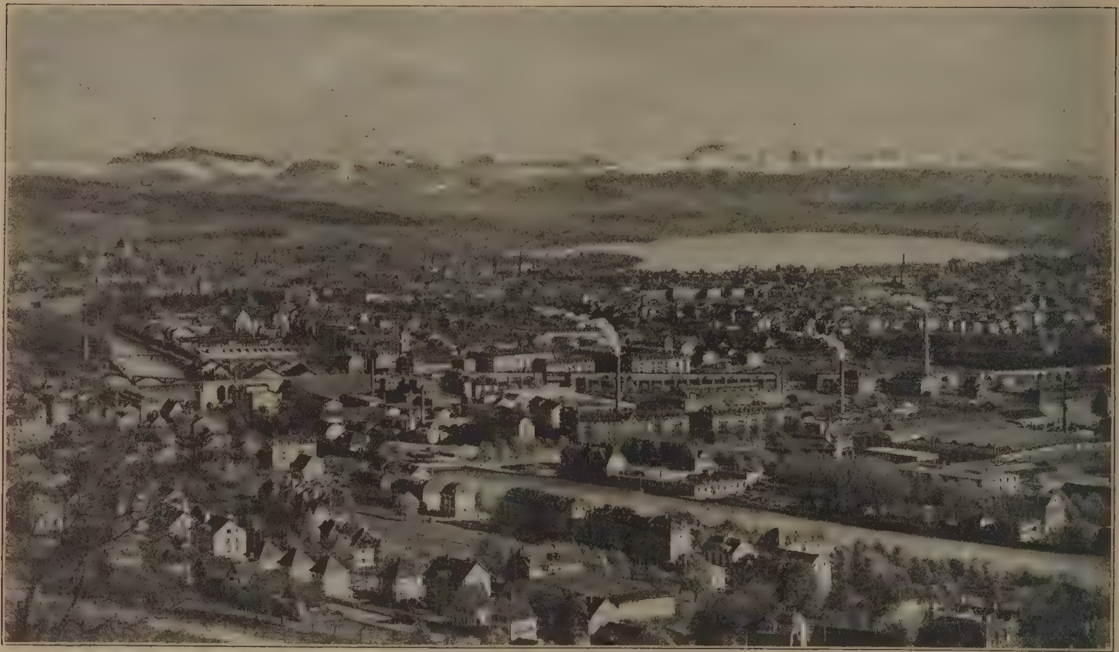
Among the manufactures are watches and clocks, jewelry, laces and embroideries, fine cotton and silk goods, light machinery, delicate tools and instruments, chocolate, and condensed milk. How do you explain the importance of the last two items in this list?

How the Swiss trade with the world. The highest ranges of the Alps are in the south of Switzerland, and there the Swiss people have built wonderful tunnels by means of which railroads from the north cross the mountains to the seaports of Italy. These tunnels make



Courtesy of Swiss Federal Railroads

Figure 214. One of the places in Switzerland where a stream has been dammed for power. You can see part of the great dam at the left. Nearly all the Swiss railroads are run by hydroelectric power obtained by harnessing the swift-flowing streams.



Courtesy of Swiss Federal Railroads

Figure 215. Looking over the roofs of Zürich toward the Lake of Zürich and the snow-capped Alps. Across the river in the picture you can see some of the mills which make Zürich a busy center for the manufacture of silk goods and cotton goods. Nearer the lake is the principal business and shopping district of the city.

Switzerland a meeting place for several of the railroads which connect northern and southern Europe, and the railroads provide the country with excellent means of transportation for carrying on trade. Switzerland can also use the internationalized waterway of the Rhine. Its trade with distant lands is carried on through Rotterdam, Antwerp, and Havre in the north, and through Genoa and Marseille in the south. On the map on pages 144–145 point out the railroads and waterways which connect Switzerland with these ports.

Cities of the Swiss plateau. Most of the people of Switzerland live in and near the plateau region in the northwest. In this region, surrounded by the best farm lands of the country, are the largest cities: Zürich, Basel, Geneva, and Bern. Find these cities on the map on pages 140–141 (*K–L5*). Which one is the capital of Switzerland? Which one is on the Rhine?

All these cities are busy industrial centers with textile mills, factories for making metal goods, and many other manufacturing plants. Bern is the capital of Switzerland, and Zürich is the largest city of the country. Basel is Switzerland's port on the Rhine, and Geneva, on a beautiful lake of the same name, is the meeting place of the League of Nations. *See Figure 215.*

Manufacturing in Austria. Austria, like Switzerland, is so mountainous that its people must depend largely on manufacturing. As yet its industries are not so well developed as those of Switzerland, chiefly because Austria has so recently become an independent country. On the whole, it has greater advantages for manufacturing than Switzerland; for it has greater forests, more coal, and some of the best iron ore in Europe. Like Switzerland, Austria is fortunate in having much water power. *See Figure 216.*

Among the best-developed industries at present are the manufacture of iron and steel, machinery, cotton goods and other textiles, wood pulp and paper, and leather and shoes. The iron-and-steel industry is located in the east near the iron mines, and the leading textile district is in the narrow western part of the country. For the textile mills and also for the pulp and paper mills much hydroelectric power is used.

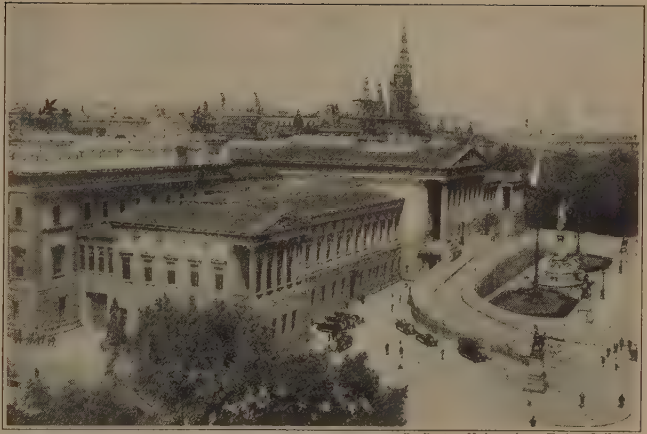

By Burton Holmes from Ewing Galloway

Figure 217. The Houses of Parliament in Vienna, where representatives from all parts of Austria meet to carry on the government of the republic. They face a circular avenue called the Ring.

Vienna (Wien). Vienna, the capital of Austria, is a surprisingly large city to be the capital of a small country. It stands fifth in population among the cities of Europe, and in it live more than a fourth of all the people of Austria. It was formerly the capital of the empire of Austria-Hungary, and long before the World War that fact and its location had made it a great center of business, trade, and manufacturing. *See Figure 217*.

Find Vienna on the map on pages 140–141 (*P4*). Notice its location on the Danube at the place where that great river leaves the highlands and enters the plain. Notice that it is also located at the southern end of the Moravian corridor. The Danube Valley and the Moravian corridor have long been great routes of travel and transportation, and Vienna, at the meeting point of these routes, is one of the great "crossroads" of Europe. Prove by the map on pages 144–145 that railroads from all directions meet there.

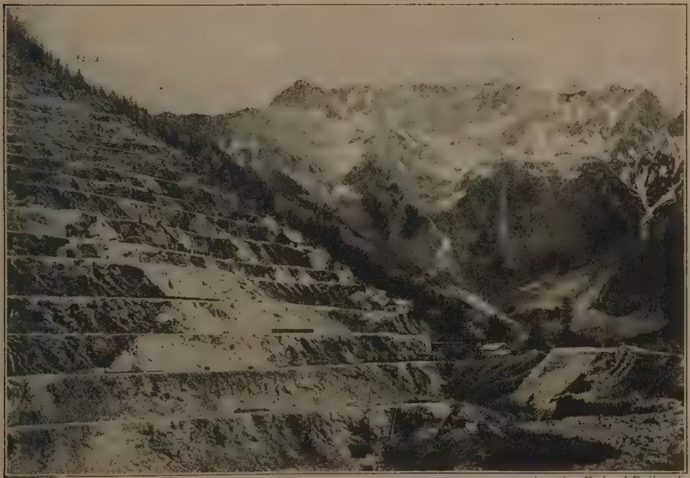

Austrian Federal Railroads

Figure 216. A mountain of iron ore in eastern Austria. The ore is mined with steam shovels from huge terraces cut in the side of the mountain. On the terraces are railroad tracks for the ore cars.

Now that Vienna is the capital of a small country instead of a great empire it is not so prosperous as it once was, but it is still a very important city. Thousands of people find work in its banks and business offices, and its mills and factories. Its busy wharves along the Danube tell of its river trade, and its large freight yards tell of its trade by land.

Vienna is a very beautiful city, with broad streets, many parks and gardens, and many fine public buildings. Like so many of the large European cities, it is a center of learning and culture, and it has some wonderful art galleries.

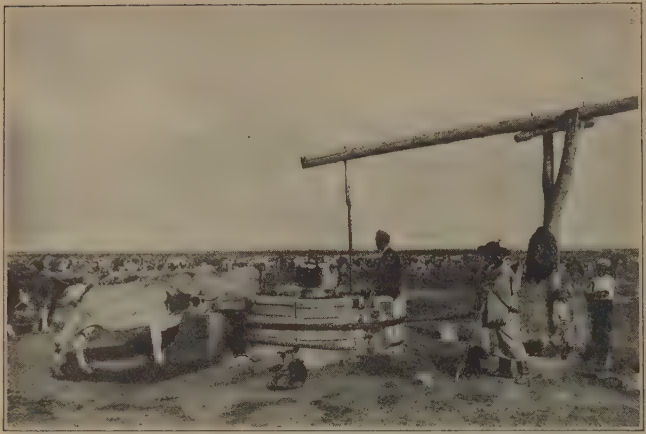


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Figure 218. Cattle grazing on the Plain of Hungary. The cattle are watered from wells such as you see in the picture. Why is Hungary an important stock-raising country?

Hungary — an agricultural country. Hungary is entirely different from Austria, for it is almost wholly a plain. It has but little coal, its water power is small, and it is poor in metal ores. Almost its only resource is its soils, for the Plain of Hungary is a fertile grassland like our prairies. For these reasons three fourths of the people of Hungary are farmers, and they raise many different crops and large numbers of cattle, sheep, and pigs. *See Figure 218.*

From the map on pages 140–141 name the leading grain crops of Hungary. Wheat ranks first, and is the most valuable money crop. Shut in by mountains, the plain has hot summers, and chiefly because of this it is one of the few regions of Europe where much corn is raised. *See Figure 219.*

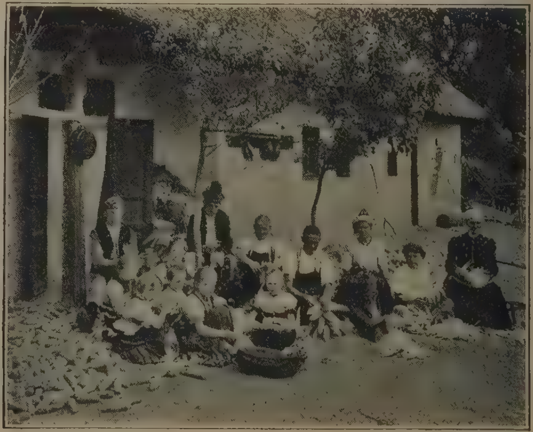
Other crops of importance are rye, barley, and potatoes. Tobacco is a money crop in the northeast; and in certain parts of the plain, sugar beets and hemp are grown.

Farm products for trade and manufacture. The Hungarian farmers produce much greater quantities of grain and meat animals than are needed for the home markets. Because of this, there is a large surplus of wheat, flour, and other foodstuffs for export to the more densely populated industrial countries of Europe.

Manufacturing is of little importance compared with farming, and the principal industries are those which make use of farm products. Among them flour-milling, sugar-refining, and the making of leather are important.

Hungary's capital. Hungary's only large city is its capital, Budapest. Find this city on the map on pages 140–141 (*R5*). Notice its location in the north-central part of the country, near the sharp bend in the Danube. What advantages for trade has this location? Turn to the map on pages 144–145 and see if Budapest is a railroad center.

Budapest is a beautiful city, made up of two parts: Buda on the hills on the west bank of the Danube, and Pest on the lowland on the east bank. A great bridge connects the two parts. Budapest is sometimes called the "Minneapolis of Europe" because of its many large flour mills. It has other kinds of manufacturing plants also, and is the leading industrial and commercial city of Hungary.



By Ewing Galloway, N.Y.

Figure 219. A Hungarian family husking corn outside their house. In Hungary, as in our country, much of the corn is used to feed and fatten cattle and pigs.

Explaining differences. This test will help you to prove that you understand the more important differences between Switzerland, Austria, and Hungary. Start each sentence with the name or names which make it correct, and complete it by giving reasons.

Of these three countries

1. Switzer------- and ---------- are the ones which are not well suited to farming because ---------------------------------------.

2. [illegible] is the one which is almost wholly a farming country because -----------.

3. Austria is the one which has the greatest advantages for manufacturing because ---.

4. ---------- is the one which carries on the most manufacturing because ---------------.

5. Austria is the one in which mining is important because -----------------------.

6. Hungary is the one in which the people produce a surplus of farm products for export because --------------------------------.

7. [illegible] and [illegible] are the two which entertain large numbers of visitors each year because -----------------------------.

Can you name these rivers? Name each river described below:

1. The river which provides a waterway from Warsaw to the Baltic Sea. Vistula

2. The river which provides Czechoslovakia with a waterway to the German seaport of Hamburg. Elbe

3. The river which provides a waterway from German Silesia to the port of Stettin. ODer

4. The river which provides a waterway from Switzerland to the Dutch port of Rotterdam. Rh e

5. The river which provides Czechoslovakia, Austria, and Hungary with a waterway to the Black Sea. Danube

Giving reasons. Give as many reasons as you can why

1. Berlin is a much larger and more important city than Warsaw.

2. Vienna, the capital of a small country, is one of the great cities of Europe.

3. Hamburg is a much more important port than Danzig.

A population test. Below is a table showing the density of population in the countries of central Europe. Study the table carefully, and then answer the questions following it.

COUNTRY	POPULATION PER SQUARE MILE
Germany	352
Czechoslovakia	266
Switzerland	252
Hungary	240
Austria	206
Poland	201

1. Of the six central European countries, which three lead in manufacturing? What relationship does the table above show between manufacturing and density of population in these countries? Ger Czech

2. What reasons can you suggest for the fact that Germany stands at the head of the list in density of population, while its neighbor, Poland, stands at the foot?

3. What reasons can you give for the fact that Austria has fewer people per square mile than Hungary? than Switzerland?

4. If the people of Austria should follow the example of Switzerland, and increase their manufactures, what effect would this probably have on the density of population? Do you think it possible that in time Austria might be able to support even more people per square mile than Switzerland? Give reasons for your answer.

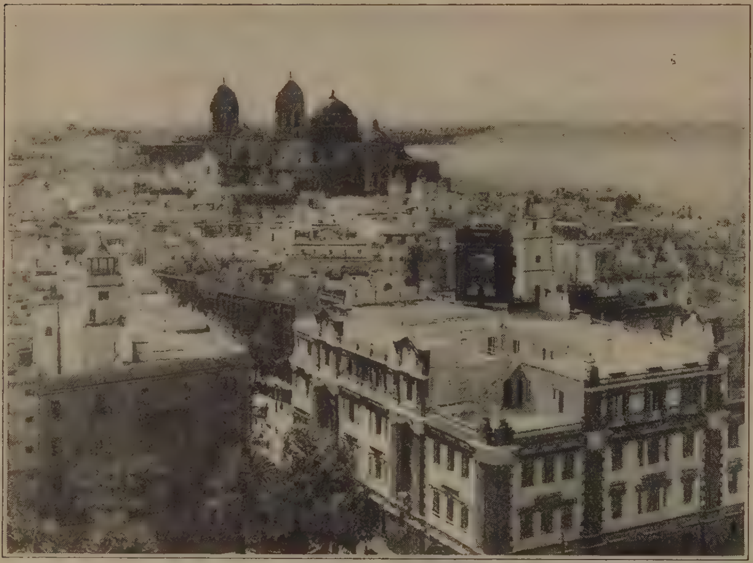
Matching countries and capitals. Match correctly the countries and capital cities listed below:

1 Germany
2 Poland
3 Czechoslovakia
4 Switzerland
5 Austria
6 Hungary

4 Bern
1 Berlin
5 Budapest
6 Prague
5 Vienna
2 Warsaw

Special credit work. 1. Hunt in old magazines for pictures taken in the Alps, and make a collection of them to show your class.

2. Try to find a book which tells some of the interesting old legends connected with the Rhine. Perhaps your teacher will let you tell one of these stories to your classmates.



Photograph by Burton Holmes from Ewing Galloway

Figure 220. A view of Cadiz, an old city on the southern coast of Spain. For many years after the discovery of America Cadiz was the headquarters of the ships which brought gold and silver from the New World.

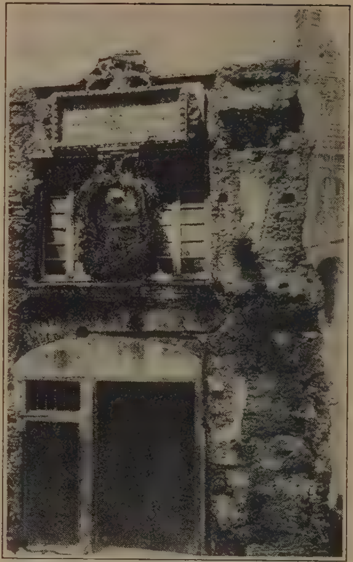


Figure 221. The house in Genoa where Columbus is believed to have lived when a boy.

SOUTHERN EUROPE AND ANATOLIA

I. MEDITERRANEAN BORDERLANDS

1. Foreword

The largest inland sea. The Mediterranean Sea is the largest inland sea in the world. From the Strait of Gibraltar it extends eastward for 2200 miles, and it touches three continents — Europe, Asia, and Africa. Toward its eastern end it is connected with the Black Sea by the Sea of Marmara and the narrow straits of the Dardanelles and the Bosporus. What canal connects the Mediterranean Sea with the Red Sea?

The Mediterranean peninsulas. On the map on pages 226–227 find the three great peninsulas of southern Europe. The westernmost one is the Iberian Peninsula, between the Atlantic Ocean and the Mediterranean Sea. What two countries occupy this peninsula? Which country is the larger?

Farther east, extending into the central part of the Mediterranean Sea, is the boot-shaped peninsula of Italy, bordered by two arms of the Mediterranean — the Tyrrhenian Sea on the west and the Adriatic Sea on the east. What country borders the Mediterranean between Spain and Italy?

Toward the eastern end of the Mediterranean is the Balkan Peninsula, which includes the land between the Adriatic and Ionian seas on the west and the Ægean and Black seas on the east. Lying wholly or partly within the Balkan Peninsula are six countries — Greece, Albania, Yugoslavia, Rumania, Bulgaria, and Turkey. Find each one of them on the map.

The map shows that only a small part of Turkey is in the Balkan Peninsula. Much the greater part of this country is in the peninsula of Anatolia, between the Black Sea and the Mediterranean. Anatolia is part of Asia, and is often called Asia Minor, which means "smaller Asia."

Mediterranean peoples of long ago. Long before any strong nations had grown up in central and northern Europe, there were groups of very advanced people living in some of the lands bordering the Mediterranean Sea. The earliest of these peoples were the Egyptians, who lived in the Nile Valley in Africa. More than five thousand years ago they were carrying on agriculture and trade, and some of their pharaohs, or rulers, built the wonderful pyramids which you will see when you visit Egypt.

At the eastern end of the Mediterranean, on what is now the Syrian coast, lived the Phœnicians. They became great traders, and were the first seafaring people of the Mediterranean. Later the Greeks came into power, and for a time their capital city of Athens was the greatest center of art and learning in the world. Still later the Romans conquered the Greeks. The Romans, who lived in what is now Italy, were great soldiers and lawmakers, and at one time they controlled all the lands bordering the Mediterranean.

A training school for seamen. Because the Mediterranean is an almost landlocked sea, it is calmer and safer for ships than the open oceans. Therefore, long before men living along the Atlantic coast of Europe ventured far from shore, Mediterranean sailors were crossing and recrossing their inland sea on trading trips which took them out of sight of land. Thus the Mediterranean became the first training school for European seamen, and the Mediterranean countries furnished the earliest of the world's great explorers.

You will recall that Columbus was born in Genoa, on the shores of Italy, and that he made his voyages of discovery in the service of Spain. At that time the Spanish and the Portuguese were among the foremost nations of Europe, and they took a leading part in exploring and settling distant parts of the world. *See Figures 220 and 221.*

You will also recall that Vasco da Gama, who discovered the route around Africa to India, was a Portuguese sea captain. Another great Portuguese explorer was Ferdinand Magellan, who planned the first trip around the world. Magellan died in the Philippine Islands, but his voyage was completed by one of his captains, a Spaniard named Del Cano. Trace the route of this famous voyage on the map on pages 334–335.

Lands won and lost. On the map on pages 334–335 find the lands explored by the Spanish and Portuguese. How does the location of Spain and Portugal explain the fact that the Spanish and Portuguese played a greater part in the early explorations than the other Mediterranean nations?

You learned in your study of the Americas how Spain and Portugal lost their colonies in the New World. Turn to the map on page 234 and find the colonial possessions of Spain and Portugal today. Find also the possessions of Italy. In what continent are nearly all of these possessions located?

Can you answer these questions? Review some of the facts which you have learned about the Mediterranean lands in earlier chapters of this book by answering the following questions:

1. Why is the Mediterranean Sea a great highway of travel and transportation? 2. What nation controls the gateways to the Mediterranean? 3. What Mediterranean lands of Africa belong to France? 4. What Mediterranean islands belong to Great Britain? 5. What Mediterranean island belongs to France? 6. What country at the eastern end of the Mediterranean is under British protection? under French protection?

Something to do. If any members of your class were born in southern Europe or if any of their families came from there, point out their European homelands on the map.

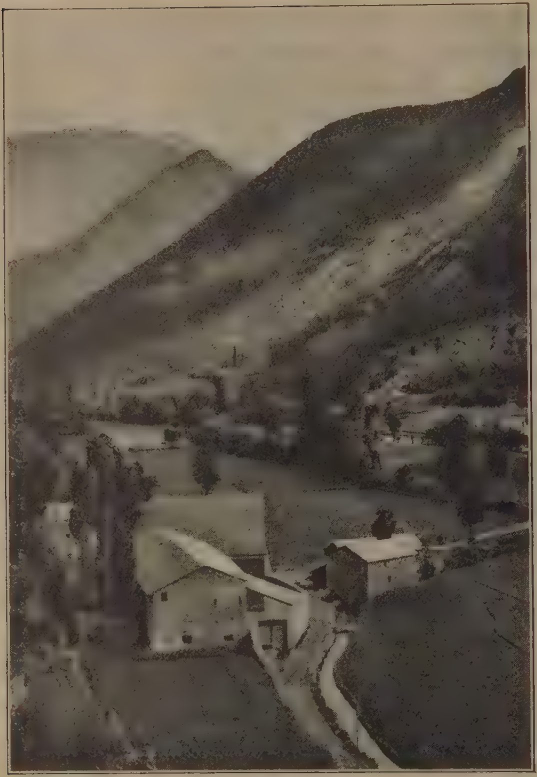


Figure 222. A valley in the Pyrenees, showing a small flour mill surrounded by cultivated fields. The mill is run by water power from a mountain stream. How do you think the steep mountain slopes are used?

2. First Glimpses of the Mediterranean Peninsulas

The various nations of southern Europe speak different languages and have somewhat different customs, yet there are many likenesses in the ways in which they use the lands in which they live. In order to understand why they live and work as they do, we need to picture to ourselves the great peninsulas which are their homelands. With the three European peninsulas we shall also study the peninsula of Anatolia.

As you read further, ask yourself this question: Are the Mediterranean peninsulas more favorable, or less favorable, for the growth of strong nations than the lands of central and northwestern Europe?

The Natural Regions

The mountain regions. In studying the map on pages 226–227 did you notice how much of southern Europe and Anatolia are mountainous? As you read the next few paragraphs trace the mountain ranges on the map.

First find the place where the Alps border the beautiful Riviera coast of France and Italy. Near Genoa the Alps join the Apennines, which make up most of the peninsula of Italy. The Apennines are lower than the Alps, and there are no glaciers or snow fields among their summits.

From the "toe" of Italy the mountains extend westward through Sicily, and appear again in northern Africa. Beyond the Strait of Gibraltar they curve eastward, forming the rugged Sierra Nevada of Spain. Farther north the Pyrenees rise like a great wall between Spain and France. *See Figure 222.*

From the eastern end of the Alps in Austria the mountain ranges swing southeastward, joining other ranges which stretch southward through the Balkan Peninsula. The Carpathians too make a great curve to the south, joining the Transylvanian Alps of Rumania. These mountains, in turn, join the Balkan Mountains, which extend eastward through Bulgaria to the Black Sea. The mountains of the Balkan Peninsula continue eastward through the peninsula of Anatolia, and the many islands in the Ægean Sea are peaks of mountain ranges which long ago connected Greece with Asia Minor.

The plateaus. You will see from the map that most of the Iberian Peninsula is a plateau. This plateau is called the Meseta, and its highest parts are from 3000 to 5000 feet above sea level. The northern and southern margins are mountainous, and through the center there are east-west mountain ranges and river canyons which make travel from north to south difficult.

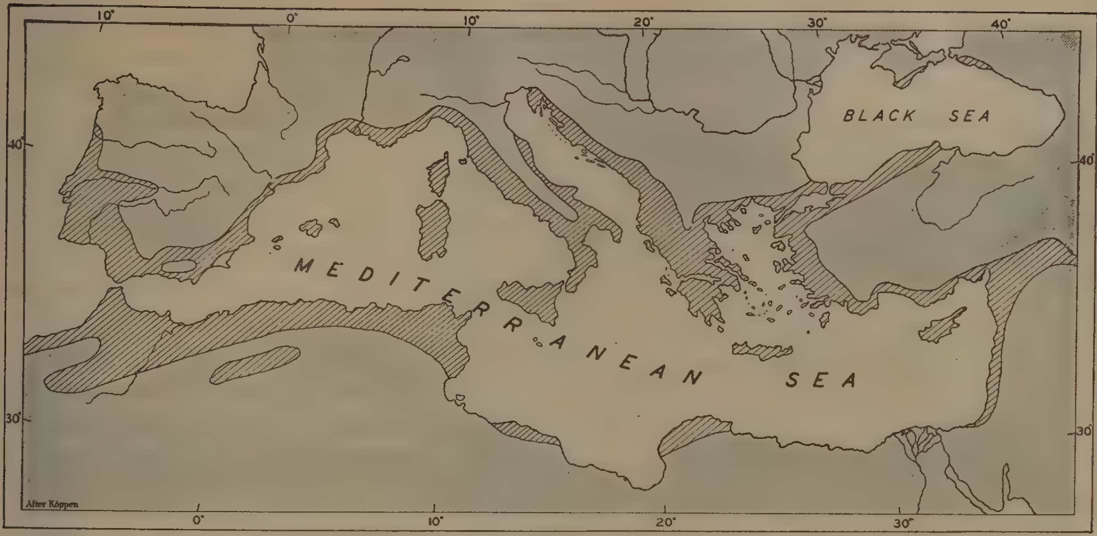


Figure 223. Mediterranean borderlands. Lands of "Mediterranean climate" are shown by slanting lines.

The map also shows that there is a plateau region in Rumania and another in Anatolia. The one in Rumania is called the Plateau of Transylvania, and the other is called the Plateau of Anatolia. Notice that both of them are encircled by mountains.

The lowlands. Turn to the map on pages 226–227 and find the few lowland regions of southern Europe. Notice especially the Plain of the Po in northern Italy, the plain of the lower Danube in Rumania and Bulgaria, and the part of the Plain of Hungary which extends into Rumania and Yugoslavia. These are the best farm lands in southern Europe.

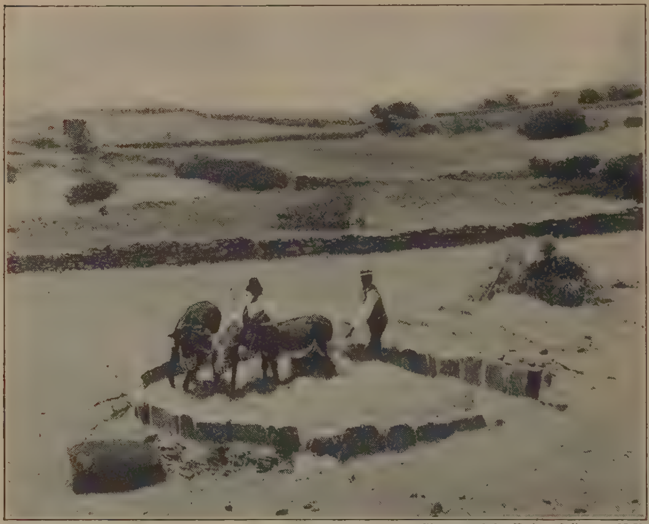
Some Differences in Climate

The Mediterranean climate. Figure 223 shows the parts of the Mediterranean borderlands which have what is called the "Mediterranean climate." In such a climate the summers are hot and dry. The winters are mild and rainy, but between the storms there are days of clear, bright sunshine.

During the northern summer, when all the wind belts of the earth move northward, the Mediterranean basin is in the belt of the northeast trade winds. These winds, blowing from the lands of eastern Europe toward the southwest, have little or no moisture, and therefore summer is a season of drought. During the northern winter, when the wind belts move southward, the Mediterranean basin is in the belt of the rain-giving westerly winds from the Atlantic Ocean. That is why winter is the rainy season.

During the hot, dry summer the earth is parched and dusty, the grasses wither and turn brown, and even the leaves on the trees look dry and lifeless. With the coming of the winter rains new grass springs up, flowers begin to bloom, the trees take on new life, and the landscape changes from brown to green.

Other kinds of climate. The parts of southern Europe and Anatolia which lie outside the limits of the Mediterranean climate have colder winters. Among these regions the Plateau of Anatolia and the interior of the Spanish Meseta have the most unfavorable climate for farming, for they have very dry summers as well as cold winters.



Photograph by Ewing Galloway, N.Y.

Figure 224. Threshing wheat in Greece. The farmers have spread out the wheat on the ground, and the oxen and donkey are trampling on it to separate the seeds from the stalks.

Elsewhere, most parts of southern Europe beyond the limits of the Mediterranean climate have rain at all seasons, usually more in summer than in winter. Their climate is much like that of central Europe, and is favorable for farming because rain falls during the growing season.

Farm Lands and Pasture Lands

Lands where farming is difficult. In spite of the fact that most parts of the Mediterranean peninsulas are hilly and mountainous, far more than half of all the people are farmers. The rougher regions make poor farming lands, but the people use them as best they can. In these regions most of the farmers work much as their ancestors did hundreds of years ago. They plant and harvest their grain by hand, and many of them do their threshing by the method shown in Figure 224.

These farming people of the rougher regions manage to make a living, but most of them are very poor. Their poverty is not their own fault, for most of them are hard workers. It is due, rather, to the fact that they are trying to live by farming in lands not well suited to that use.

The better farm lands. The better farm lands are the lowland regions along the coasts and in the valleys of the larger rivers. The largest and most important of these regions are the Plain of the Po in Italy and the plains of Yugoslavia and Rumania.

These lowlands are beyond the limits of the Mediterranean climate and do not suffer from summer drought. Thus in climate as well as surface they are better suited to farming than most parts of southern Europe.

Farming in the Mediterranean climate. In the lands of Mediterranean climate farming goes on the year round. During the summer the farmers are busy raising fruits — chiefly grapes, olives, figs, oranges, and lemons. Most of the citrus-fruit groves are irrigated, but the grapevines and the olive and fig trees can stand the summer drought and therefore do not need irrigation. In certain places nuts of various kinds are also important crops.

The principal winter crops are wheat and barley. They are planted in the autumn just before the first rains are expected, and they grow steadily during the mild, rainy winter. After the winter rains are over, they ripen quickly in the hot sun and are ready to be harvested in the late spring. Earlier in the spring, while the moisture from the winter rains is still in the ground, the farmers plant crops of vegetables which they harvest before the hottest and driest part of the summer begins.

How the Mediterranean crops are used. From the grapes and olives the people make large quantities of wine and olive oil. Wine is the principal drink of the Mediterranean nations, and olive oil takes the place of butter at meals and of lard and other fats for cooking. Both wines and olive oil are produced in such large quantities that there is a surplus for export. Oranges and lemons are also valuable exports, as well as dried figs, raisins, currants, and nuts.

There is no surplus of the winter crops of grain; for the Mediterranean people need all that they can raise, and they even have to import additional supplies of wheat. Most of the vegetables also are used at home, though a few special varieties are grown in sufficient quantities for export.

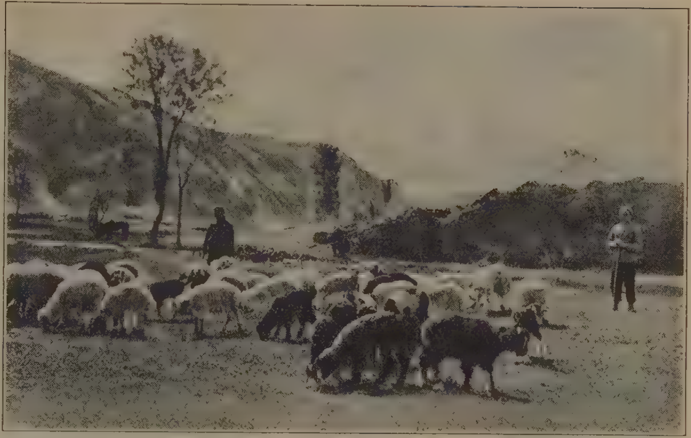


Figure 225. Turkish shepherds with their sheep in Anatolia. Many parts of the Plateau of Anatolia which are too dry for farming have enough grass for the raising of sheep and goats.

The pasture lands. There are no great ranches in southern Europe and Anatolia, but many of the people make at least part of their living by keeping live stock. In the rougher regions many of the farmers keep sheep or goats, pasturing them on the slopes that are too steep and rocky for crops. In the driest regions, such as the Plateau of Anatolia and parts of the Spanish Meseta, the raising of sheep and goats is more important than farming. *See Figure 225.*

In certain other regions, especially in the Balkan Peninsula, large numbers of pigs are pastured in the forests of oak and beech trees, where they eat the acorns and beechnuts which fall to the ground.

Mediterranean Fisheries

Making a living from the sea. Along the shores of the Mediterranean peninsulas there are little villages where many of the people make their living by fishing. Visitors always enjoy watching the fishermen as they start out in the early morning in their little boats with colored sails, or as they come sailing home with their day's catch.

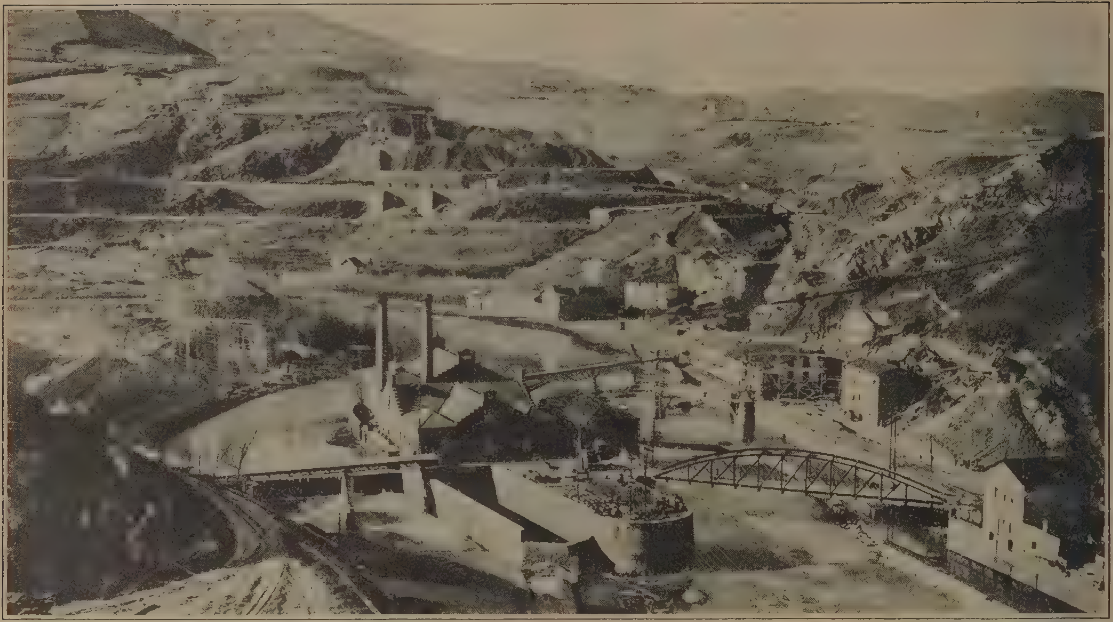
The principal kinds of fish caught along these coasts are sardines and tunny. There is always a good market for them, for fish is a very important food in these Mediterranean lands — so important that the people also import large quantities of salted codfish, chiefly from Norway and Newfoundland.

Along the shores of Sicily, Italy, and Greece many men make a business of dredging or diving for sponges. Others prepare the sponges for use by washing, bleaching, and drying them.

Some things to explain. Explain why

1. The Mediterranean borderlands of southern Europe have winter rains and summer drought.
2. Farming goes on the year round in the lands of Mediterranean climate.
3. Wheat and barley are winter crops in those lands.
4. Grapes and olives are crops well suited to the Mediterranean climate.

A check. Turn back to page 218 and read again the question in the second paragraph of this section of the text. From what you have learned thus far, how should you answer it? What reasons can you give for your answer?



U. S. Department of Commerce

Figure 226. One of the iron mines in northern Spain, near Bilbao. The deposits of iron ore in this part of Spain are among the richest in Europe, and they have been worked ever since the days when the Romans ruled the Mediterranean lands. Today Bilbao exports more iron ore than any other seaport of Europe.

II. SPAIN AND PORTUGAL

Foreword. As you know, in the days of Columbus Spain and Portugal were among the leading countries of Europe. Little by little, however, they have lost the high rank which they once held, and other European countries farther north have outstripped them in prosperity and power. These facts suggest that Spain and Portugal must suffer from handicaps which have hindered their growth in modern times. Try to discover what these handicaps are as you study this chapter.

1. A VISIT TO THE IBERIAN PENINSULA

Let us imagine that we have chartered a boat for a visit to Spain and Portugal. We shall stop at the more important seaports, and take time to make some trips inland. This will give us an opportunity to find out why these countries are less prosperous than those farther north in Europe. On this trip keep the following questions in mind and try to find answers for them:

1. What natural resources have Spain and Portugal, and how do the people make use of them?
2. What do these countries export and import, and why?

Spain's iron-and-coal district. We shall sail first for Bilbao, a port on the northern coast of Spain. There we shall probably see some British ships loading iron ore. Spain is rich in metal ores, and the iron ore in the north is one of its most valuable resources. Find Bilbao on the map on pages 226–227 (*C2*) and notice that northern Spain has coal mines as well as iron mines. *See Figure 226.*

Bilbao and Santander, farther west, have blast furnaces and steel mills, but as yet the

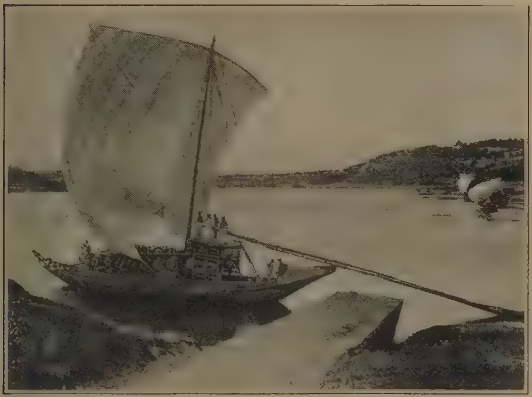


Figure 227. A boat on the Douro River, loaded with kegs of wine. Kegs of Port wine are sent down to Oporto in river boats, in trains, and in oxcarts.

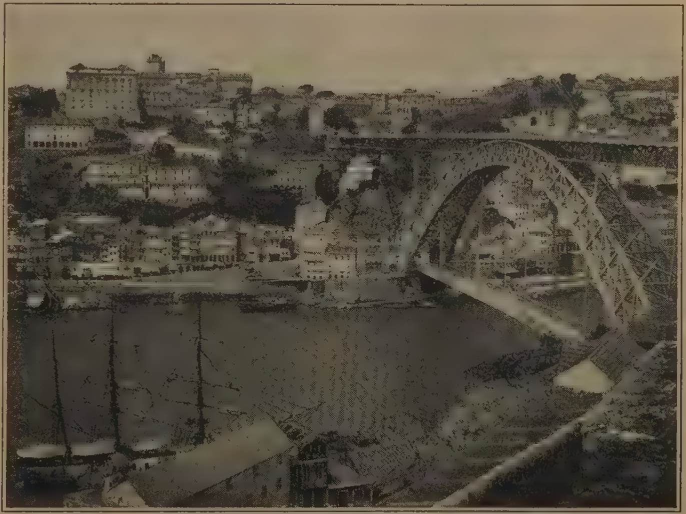
iron-and-steel industry of Spain is not very great. That is because the Spanish have been slow to develop manufacturing industries, and only in recent years have they made an effort to use their iron ore in any large measure to manufacture iron and steel. At present about half the iron ore mined in Spain is exported, chiefly to Great Britain, and iron and steel goods are imported from that country.

Northwestern Spain. As we sail westward from Bilbao and swing around the northwestern corner of Spain, we shall be passing a hilly coast with many harbors and little fishing villages which will remind us of Brittany. Very likely we shall see some sardine fishermen in their boats.

This northwestern corner of Spain is in the path of westerly winds the year round, and therefore its climate is mild and moist. The land is hilly, but the valleys are fertile and there is a large farming population. This is Spain's "land of cattle and corn," for it is the only part of the country where the pasturage is rich and there is rain enough in summer for the growth of corn. Rye and potatoes are also important crops, and many of the farmers keep pigs as well as cattle.

A stop at Oporto (Porto). Our next stop is at Oporto, the seaport of northern Portugal. Find Oporto on the map on pages 226–227 (*B2*) and notice its location at the mouth of the Douro River. As we approach the mouth of the river we catch glimpses of vineyards and olive groves in the distance. The olive groves are a sign that we have reached the part of the coast of the Iberian Peninsula where the "Mediterranean" climate begins.

On the wharves at Oporto we shall see barrels and kegs of wine ready for export, for this city is the shipping point for the "Port" wines for which Portugal is famous. These wines come from vineyards in the sunny valley of the Douro River, where tons and tons of grapes are grown each year, and in value they make up more than a fourth of all Portugal's exports. *See Figures 227 and 228.*



Photograph by Burton Holmes from Ewing Galloway

Figure 228. A view of Oporto, showing the steel bridge over the Douro River. Fair-sized ocean ships can come up the river to Oporto; but since the Douro is not very deep, a harbor for larger ocean ships has been built three miles north of the mouth of the river.

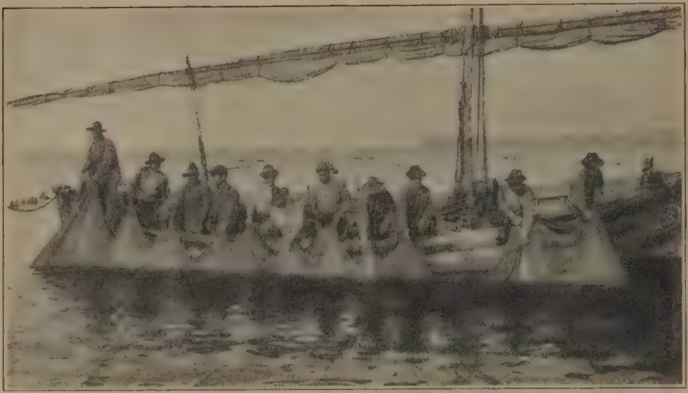


Figure 229. Portuguese fishermen pulling up a net full of sardines. Sardines are caught all along the coast of Portugal, and they form one of the most valuable export products of the country.

From the map on pages 226–227 tell what you expect to see being unloaded from ships from distant lands at Oporto. The cotton goes to mills in the city, for Oporto is a textile-manufacturing center of some importance. Can you prove by the Portuguese imports that the people do not manufacture sufficient cotton goods for their needs?

Portugal's capital. Steaming southward from Oporto, we soon reach Lisbon (Lisboa), the capital and largest city of Portugal. Find Lisbon on the map on pages 226–227 (*B3*). Near the mouth of what river is it located? What are its leading exports?

Lisbon is an attractive city, built on hills which slope down to the Tagus. It has an excellent harbor, and it became a busy seaport in the days when the Portuguese were among the great exploring and trading nations of the world. It is still the leading seaport of Portugal, but it has lost the high rank which it once held among the ports of the world.

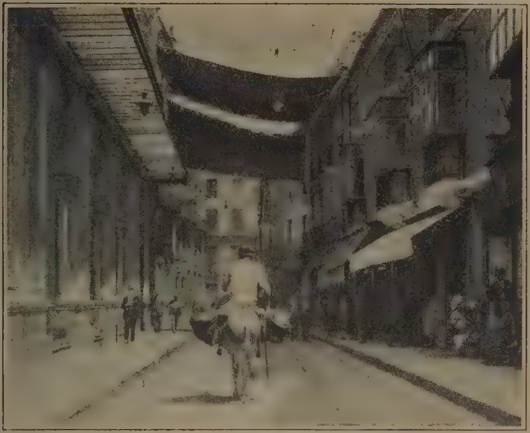
A trip inland from Lisbon. If we travel north or south from Lisbon, or up the Tagus Valley, we shall see why fruits and nuts are among the leading exports of Portugal. We shall find the hillsides, as well as the lowlands, dotted with vineyards and with groves where olives, figs, oranges, almonds, and other fruits and nuts are grown. You already know how well the Mediterranean climate is suited to these crops, and why, therefore, there is a surplus for export.

In southern Portugal we shall discover where the cork that is exported comes from. Cork oaks, like olive and fig trees, can withstand summer drought, and they grow wild in southern Portugal. Some of the cork is gathered from the wild trees, but even more from trees in planted groves. The sheets of cork are sent to factories in Lisbon, where they are dipped in hot water, pressed flat, and dried. Some of the cork is exported in this form, but from much of it bottle corks are cut by machinery, and these too are exported in large quantities. Portugal is one of the leading countries of the world in the production and exportation of cork, and our own country is one of the best customers for it.

Perhaps we can plan to have our boat meet us at the fishing port of Setubal, south of Lisbon. There we shall see canneries where large quantities of sardines caught by Portuguese fishermen are packed in tins and sent to Lisbon for export. *See Figure 229.*

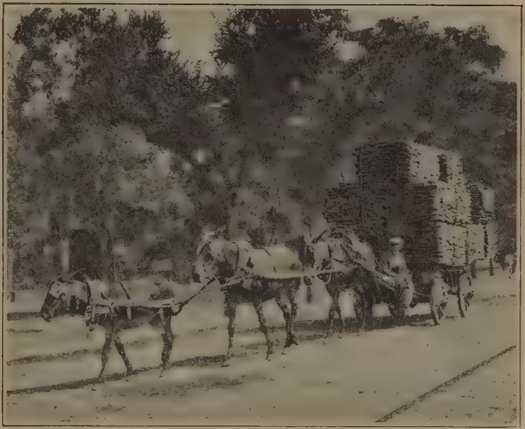
Resources that are not fully used. During our travels in Portugal we shall find the people raising corn, wheat, rye, and other crops in various places. We shall notice, however, that most of the farmers do their work in simple, old-fashioned ways. As a result, most of them are poor, and they do not raise enough grain to supply the needs of the country.

We shall also discover that while Portugal has considerable mineral wealth, little mining is done. Coal is not plentiful, but there are valuable resources of metal ores which might be mined in much greater quantities than they are today.



De Cou from Ewing Galloway, N. Y.

Figure 230. One of the narrow streets in old Seville. The canopies over the street are put up to protect the passersby from the heat of the sun.



De Cou from Ewing Galloway, N. Y.

Figure 231. A Spanish cart bringing a load of cork bark to a factory in Seville. This is a common means of transportation in southern Spain.

Finally, we shall discover that Portugal is not very well supplied with first-class railroads, and that many of the roads are very poor. For this reason the commonest means of transportation in many parts of the country is the slow-moving oxcart. Poor transportation is perhaps the greatest of the handicaps to the development of the resources of Portugal.

A trade test. From the map on pages 226–227 make a list of the leading exports of Portugal and another of the leading imports. Then answer the following questions:

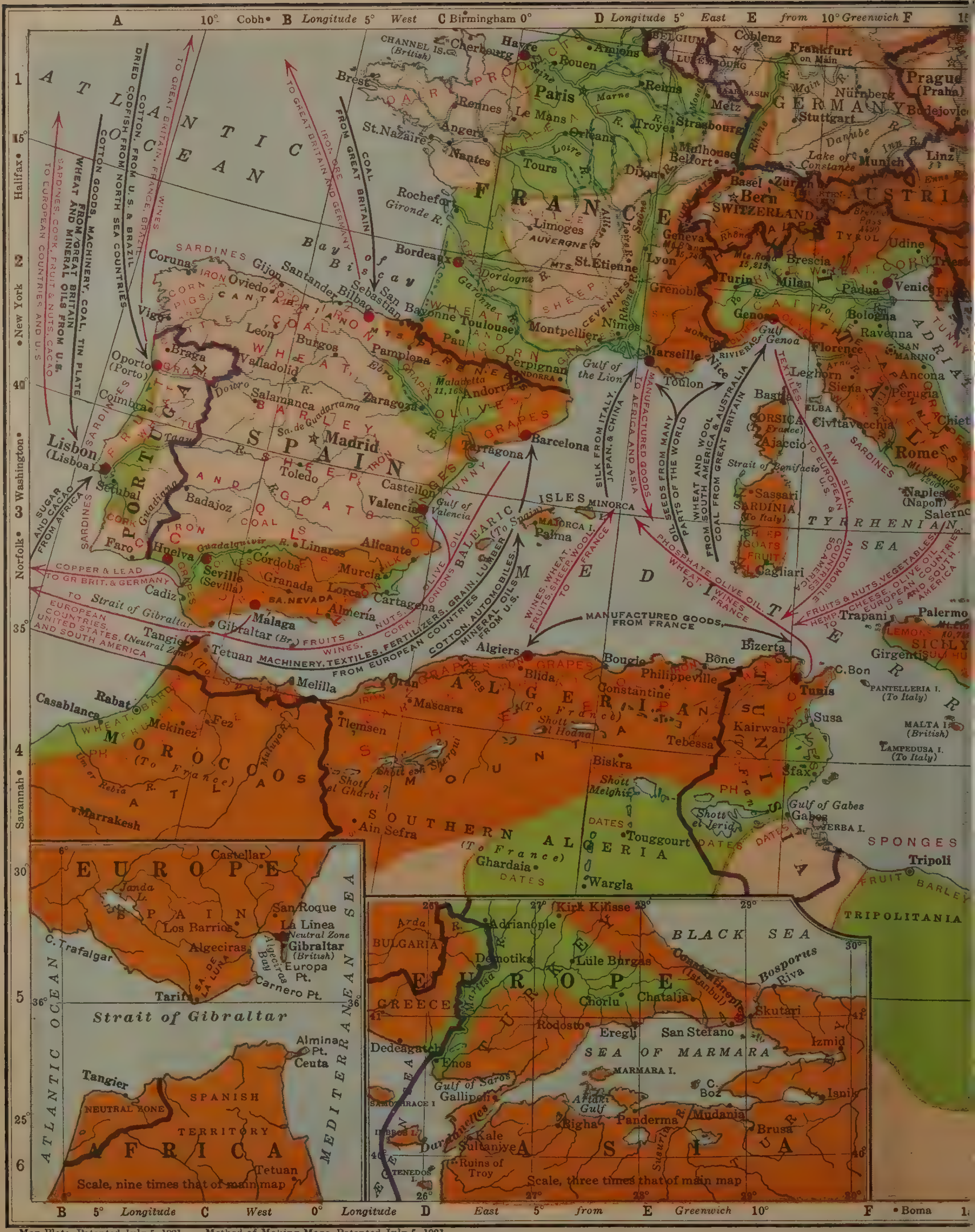
1. Why are wines, cork, and fruits among the leading exports of Portugal?
2. How are the imports of tin plate connected with the exports of sardines?
3. Which of the imports shows that the Portuguese farmers do not raise enough grain to supply the needs of the people? wheat
4. What imports suggest the fact that Portugal is not an important manufacturing country? mach
5. What imports suggest the trade of Portugal with its African colonies?
6. What reason can you give for the fact that the Portuguese carry on a considerable trade with Brazil?

"Sunny Spain." Have you ever heard people speak of "sunny Spain"? They mean southern and eastern Spain, with its brilliant sunshine and its bright blue skies. This part of Spain has a "Mediterranean" climate.

Up the Guadalquivir to Seville. We shall get our first glimpse of "sunny Spain," with its vineyards and its fruit groves, as we steam up the Guadalquivir River to Seville (Sevilla). Find Seville on the map on pages 226–227 (*B3*). Although it is about 70 miles inland, it is a seaport, because the Guadalquivir River has been made deep enough for good-sized ocean-going ships.

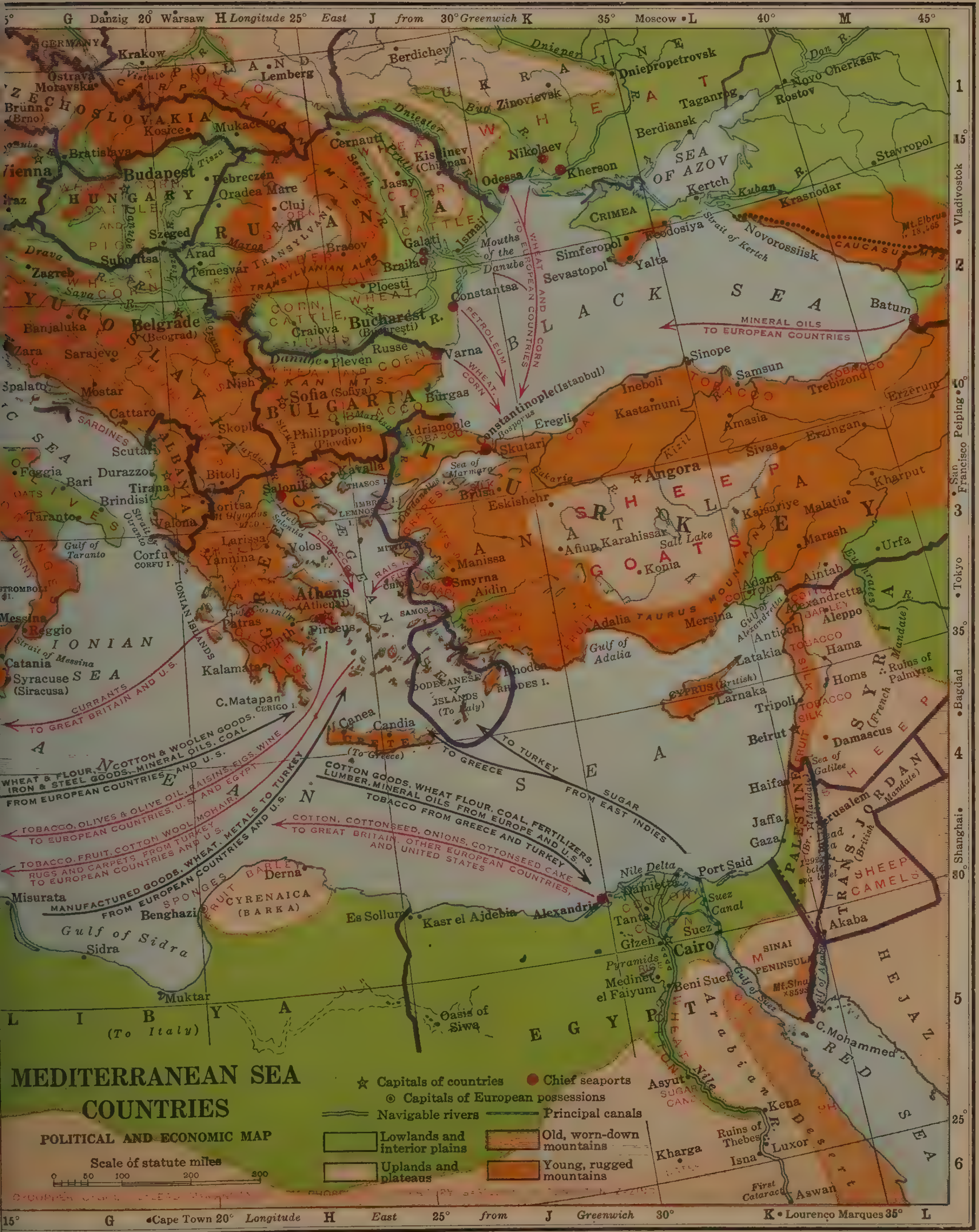
Seville is a very old city, with narrow, winding streets and some beautiful public buildings. Most of the buildings are only two or three stories high, and many of the houses are built around open courts, or *patios*, planted with flowers and small trees. Where in the Americas did we find houses of this style?

Seville is the business center of the Guadalquivir Valley, and the chief port of export for the wines, olive oil, and fruits which are the leading products of that region. The city also has a few manufacturing plants, among which cork factories are important. Southwestern Spain, like southern Portugal, has many groves of cork oaks. *See Figures 230 and 231.*



Longitude 5° West
Birmingham 0°
Longitude 5° East from 10° Greenwich
ATLANTIC OCEAN
Bay of Biscay
FRANCE
SPAIN
PORTUGAL
GERMANY
SWITZERLAND
AUSTRIA
ITALY
MOROCCO (To France)
ALGERIA (To France)
SOUTHERN ALGERIA (To France)
TUNIS
TRIPOLITANIA
BALEARIC ISLES (To Spain)
CORSICA (To France)
SARDINIA (To Italy)
SICILY
MEDITERRANEAN SEA
TYRRHENIAN SEA
Gulf of the Lion
Strait of Gibraltar
Paris
Madrid
Lisbon (Lisboa)
Rome
Marseille
Barcelona
Algiers
Tunis
Tripoli
TO GREAT BRITAIN, FRANCE, BRAZIL WINES
DRIED CODFISH FROM NORTH SEA COUNTRIES
COTTON, FROM U.S. & BRAZIL
COTTON GOODS, MACHINERY, COAL, TIN PLATE FROM GREAT BRITAIN
WHEAT AND MINERAL OILS FROM U.S.
SARDINES, CORK, FRUIT & NUTS, CACAO TO EUROPEAN COUNTRIES AND U.S.
TO GREAT BRITAIN AND GERMANY IRON ORE
COAL FROM GREAT BRITAIN
SUGAR AND CACAO FROM AFRICA
COPPER & LEAD TO GR BRIT. & GERMANY
TO EUROPEAN COUNTRIES, UNITED STATES, AND SOUTH AMERICA
MACHINERY, TEXTILES, FERTILIZERS, GRAIN, LUMBER FROM EUROPEAN COUNTRIES
COTTON, AUTOMOBILES, MINERAL OILS FROM U.S.
WINES, FRUITS & NUTS, CORK, ONIONS, OLIVE OIL
WINES, WHEAT, FRUITS, SHEEP, WOOL TO FRANCE
MANUFACTURED GOODS, FROM FRANCE
SILK FROM ITALY, JAPAN, & CHINA
MANUFACTURED GOODS TO AFRICA AND ASIA
OIL SEEDS FROM MANY PARTS OF THE WORLD
WHEAT AND WOOL FROM SOUTH AMERICA & AUSTRALIA
COAL FROM GREAT BRITAIN
PHOSPHATE, OLIVE OIL, WHEAT, WINES TO FRANCE
RAW SILK TO EUROPEAN U.S.
AUTOMOBILE TEXTILES TO SO. AMERICA
FRUITS & NUTS, VEGETABLES, CHEESE, OLIVE OIL, HEMP, TO EUROPEAN COUNTRIES U.S. AND SOUTH AMERICA
EUROPE
SPAIN
Gibraltar (British)
AFRICA
SPANISH TERRITORY
NEUTRAL ZONE
ATLANTIC OCEAN
MEDITERRANEAN SEA
Scale, nine times that of main map
BLACK SEA
SEA OF MARMARA
EUROPE
ASIA
Constantinople (Istanbul)
Dardanelles
Scale, three times that of main map
Longitude West 0° Longitude East 5° from Greenwich 10°

Map Plate, Patented July 5, 1921 · Method of Making Maps, Patented July 5, 1921



MEDITERRANEAN SEA COUNTRIES

POLITICAL AND ECONOMIC MAP

Scale of statute miles

★ Capitals of countries
● Chief seaports
◎ Capitals of European possessions
Navigable rivers
Principal canals
Lowlands and interior plains
Old, worn-down mountains
Uplands and plateaus
Young, rugged mountains
0 50 100 200 300
Danzig
Warsaw
Longitude 25° East from 30° Greenwich
Moscow
G H J K L M
20° 35° 40° 45°
GERMANY
Krakow
POLAND
Lemberg
CZECHOSLOVAKIA
Ostrava
Moravska
Brünn (Brno)
Kosice
Mukacevo
Bratislava
Vienna
Budapest
Debreczen
Oradea Mare
Cluj
HUNGARY
RUMANIA
Szeged
Arad
Temesvar
Subotitsa
Zagreb
Sava R.
Drava
YUGOSLAVIA
Banjaluka
Belgrade (Beograd)
Sarajevo
Zara
Spalato
Mostar
Cattaro
Nish
Skoplje
Bitolj
ALBANIA
Scutari
Durazzo
Tirana
Valona
Corfu
CORFU I.
Cernauti
Kishinev (Chişinău)
Jassy
Brasov
Galati
Braila
Ismail
Ploesti
Bucharest (Bucureşti)
Craiova
Constantsa
Mouths of the Danube
Danube
Russe
Pleven
Varna
BULGARIA
Sofia (Sofiya)
Philippopolis (Plovdiv)
Burgas
Adrianople
Maritsa
TRANSYLVANIAN ALPS
BALKAN MTS.
CORN
CATTLE
WHEAT
PIGS
TOBACCO
Dniester
Berdichev
UKRAINE
Zinovievsk
Bug R.
Dnieper
Dniepropetrovsk
Nikolaev
Kherson
Odessa
Berdiansk
Taganrog
Rostov
Novo Cherkask
Don R.
SEA OF AZOV
Kertch
Strait of Kertch
Kuban
Krasnodar
Stavropol
CRIMEA
Simferopol
Feodosiya
Sevastopol
Yalta
Novorossiisk
CAUCASUS MTS.
Mt. Elbrus 18,465
Batum
BLACK SEA
MINERAL OILS TO EUROPEAN COUNTRIES
PETROLEUM
WHEAT, CORN
WHEAT AND CORN TO EUROPEAN COUNTRIES
Sinope
Samsun
Trebizond
Erzerum
Ineboli
Kastamuni
Amasia
Erzingan
Sivas
Eregli
COAL
Constantinople (Istanbul)
Bosporus
Skutari
Sea of Marmara
Brusa
SILK
Eskishehr
Angora
Sakaria
Kizil
TURKEY
SHEEP
GOATS
Kaisariye
Malatia
Kharput
Marash
Urfa
Aintab
Euphrates
Afiun Karahissar
Salt Lake
Konia
TAURUS MOUNTAINS
Adana
COTTON
Mersina
Adalia
Gulf of Adalia
Alexandretta
Gulf of Alexandretta
Antioch
Aleppo
BARLEY
Latakia
Hama
Homs
Ruins of Palmyra
SYRIA (French Mandate)
Tripoli
Beirut
Damascus
FRUIT
CYPRUS (British)
Larnaka
Haifa
Sea of Galilee
Jaffa
Gaza
PALESTINE (Br. Mandate)
Jerusalem
Dead Sea
1292 ft. below sea level
TRANS-JORDAN (British Mandate)
SHEEP CAMELS
Akaba
Gulf of Akaba
HEJAZ
SINAI PENINSULA
Mt. Sinai 8593
Gulf of Suez
Suez
Suez Canal
Port Said
Nile Delta
Damietta
Tanta
COTTON
Gizeh
Cairo
Pyramids
RICE
Medinet el Faiyum
Beni Suef
EGYPT
Arabian Desert
WHEAT
Nile R.
Asyut
SUGAR CANE
Kena
Ruins of Thebes
Luxor
Isna
Kharga
First Cataract
Aswan
RED SEA
C. Mohammed
Oasis of Siwa
Alexandria
Kasr el Ajdebia
Es Sollum
CYRENAICA (BARKA)
Derna
Benghazi
BARLEY
SPONGES
FRUIT
Gulf of Sidra
Sidra
Misurata
Muktar
LIBYA (To Italy)
Salonika
Kavalla
THASOS I.
LEMNOS I.
IMBROS I.
Dardanelles
Koritsa
Mt. Olympus 9750
Larissa
Yannina
Volos
GREECE
Athens (Athenai)
Piraeus
Patras
Corinth
Gulf of Corinth
Kalamata
C. Matapan
CERIGO I.
IONIAN ISLANDS
AEGEAN SEA
MITYLENE
CHIOS
SAMOS I.
Smyrna
Manissa
Aidin
RAISINS
FIGS
Rhodes
RHODES I.
DODECANESE ISLANDS (To Italy)
Canea
Candia
CRETE (To Greece)
Foggia
Bari
Brindisi
Taranto
Gulf of Taranto
Strait of Otranto
ITALY
OLIVES
SARDINES
TUNNY
STROMBOLI I.
Messina
Reggio
Strait of Messina
Catania
Syracuse (Siracusa)
IONIAN SEA
MEDITERRANEAN SEA
CURRANTS TO GREAT BRITAIN AND U.S.
WHEAT & FLOUR, COTTON & WOOLEN GOODS, IRON & STEEL GOODS, MINERAL OILS, COAL FROM EUROPEAN COUNTRIES AND U.S.
TOBACCO, OLIVES & OLIVE OIL, RAISINS, FIGS, WINE TO EUROPEAN COUNTRIES, U.S. AND EGYPT
TOBACCO, FRUIT, COTTON, WOOL, MOHAIR, RUGS AND CARPETS FROM TURKEY TO EUROPEAN COUNTRIES AND U.S.
MANUFACTURED GOODS, WHEAT, METALS TO TURKEY FROM EUROPEAN COUNTRIES AND U.S.
COTTON GOODS, WHEAT FLOUR, COAL, FERTILIZERS, LUMBER, MINERAL OILS FROM EUROPE AND U.S.
TOBACCO FROM GREECE AND TURKEY
COTTON, COTTONSEED, ONIONS, COTTONSEED CAKE TO GREAT BRITAIN, OTHER EUROPEAN COUNTRIES, AND UNITED STATES
TO GREECE
TO TURKEY
SUGAR FROM EAST INDIES
Vladivostok
Peiping
San Francisco
Tokyo
Bagdad
Shanghai
15° Cape Town 20° Longitude East 25° from Greenwich 30°
Lourenço Marques 35°
1 2 3 4 5 6
45° 40° 35° 30° 25°

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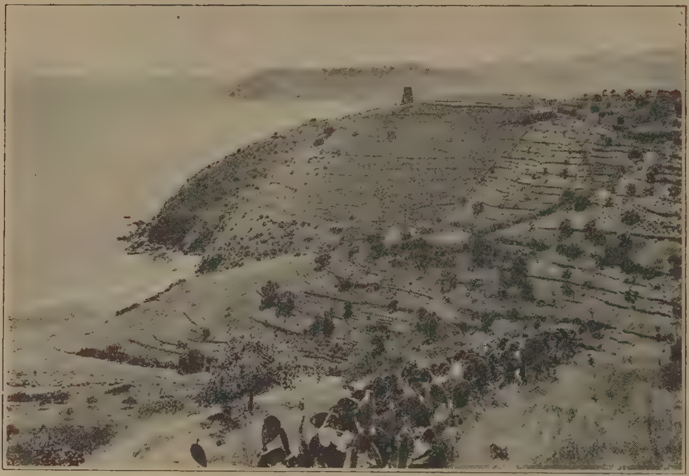


Photograph by Burton Holmes from Ewing Galloway

Figure 232. **Terraced farm lands on the hilly coast near Málaga. On terraces of this kind the people of southern Spain plant vineyards, orchards of fruit trees, and crops of winter wheat and barley.**

Passing through the Strait of Gibraltar, we cruise along the coast of southeastern Spain, and in the distance we see the snow-capped peaks of the Sierra Nevada outlined against the clear blue sky.

The Sierra Nevada is the highest of the many ranges of mountains in southeastern Spain. In the sheltered valleys among these mountains the people raise grain, and grapes, olives, and other fruits. Málaga, the chief seaport of the region, is the center of a district where large quantities of grapes are sun-dried to make raisins. *See Figure 232.*

Mineral wealth in southern Spain. On the map on pages 226–227 find the mining centers in the southern part of the Meseta which we might visit by train from Seville. Notice that there are other mining centers in the Sierra Nevada. The copper mines are the richest in Europe, and the lead, zinc, and iron mines are also very valuable. Since Spain is not an industrial country, large quantities of its metals are exported to the manufacturing countries of western and central Europe. The port of Huelva is the shipping point for most of the exports of copper.

In studying the map did you notice where mercury, or quicksilver, is mined? In some years Spain is the world's leading exporter of this mineral product. Mercury, as you probably know, is used in thermometers and in "silvering" the backs of mirrors. It also has several other less well-known uses.

From Seville to Valencia. Leaving Seville, our boat steams down the Guadalquivir and turns eastward, passing the old Spanish port of Cadiz with its fine natural harbor. What did you learn about Cadiz on page 216? Today it is a much less important port than Seville.

Passing by the coastal lowland in which the city of Murcia is located, we round the eastern end of the mountains and soon reach Valencia, the third largest city of Spain. Find Valencia on the map on pages 226–227 (*C3*) and notice that it is located in another coastal lowland.

"Garden spots" of Spain. The lowlands of Murcia and Valencia are very dry, and yet they are among the richest and most productive regions of Spain. For many centuries they have been irrigated with water from rivers that rise in the mountains, and they are "garden spots" where all kinds of Mediterranean crops are grown.

The lowland of Valencia is one of the chief orange-growing regions of southern Europe, and as we visit its great orange groves we shall be reminded of southern California. The oranges are exported in large quantities, chiefly to the countries of northern Europe.

The city of Valencia is the business center of the lowland, and the shipping point for its oranges and other products. It also carries on some manufacturing. Here and in Murcia there are silk mills which use raw silk from

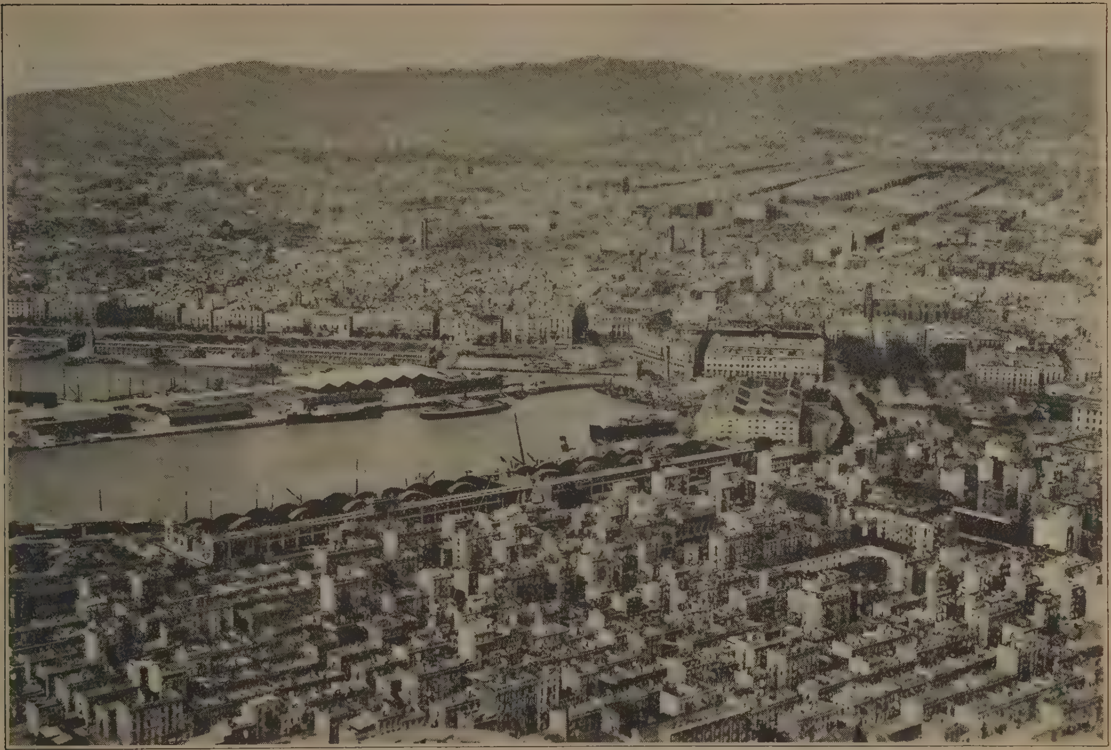


Figure 233. A view of Barcelona, showing the inner end of the harbor and one of the docks for ships. Barcelona has a large natural harbor which has been made deep enough for the largest ships, and passenger liners, as well as ocean freighters, come to its wharves. Prove by the map on pages 226–227 that the leading exports of Barcelona are chiefly "Mediterranean" products. How do you explain this fact?

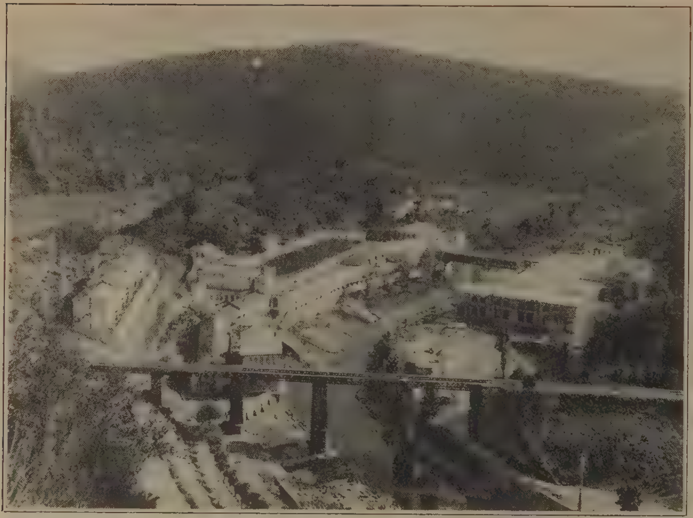
places close by where some of the people make a business of growing mulberry trees and raising silkworms.

Barcelona. Leaving Valencia, we sail northeastward to Barcelona, the second largest city and the leading seaport of Spain. Find Barcelona on the map on pages 226–227 (*D2*). What does Figure 9 (p. 13) show about the density of population around Barcelona compared with the rest of Spain?

Barcelona is the center of the only important industrial district of Spain, and is the leading manufacturing city of the country. Coal for its mills and factories comes from the mines of northern Spain, and electricity from hydroelectric plants in the neighboring mountains provides additional power.

The leading manufactures of Barcelona are cotton, woolen, and linen goods. What does Barcelona import from the United States for its textile mills? The making of cotton goods is the most important manufacturing industry, not only at Barcelona but in Spain as a whole, and raw cotton is the most valuable import of the country. Most of it comes from the United States. *See Figures 233 and 234.*

The Ebro Valley. The map shows that the Ebro Valley is cut off from the coast by mountains. It is a dry, treeless region, but along the river wheat and other cereals are grown on irrigated lands. In many parts of the valley grapes and olives are grown without irrigation, and wines and olive oil are exported through Barcelona.



Courtesy of Saco-Lowell Shops

Figure 234. A cotton mill in the foothills of the Pyrenees, north of Barcelona. The machinery used in this mill was manufactured in our state of Massachusetts, and is run by hydroelectric power.

Across the Meseta to Madrid. The map on pages 144–145 will show you that from Barcelona or any of the other Spanish ports where we have stopped we can take a train to Madrid, the capital of Spain. No matter what port we start from, we must cross a long stretch of the bleak, dry Meseta, for Madrid is located almost exactly in the center of Spain. Most of the Meseta is a grassland with but few trees, cold and wind-swept in winter and hot and dusty in summer.

The southern part of the Meseta is so dry that the chief use of the land is for pasturing sheep and goats. In the spring many of the herdsmen take their animals into the mountains, where there is fresh green grass after the snow melts away. In this way the grass of the plateau is saved for winter pasturage. *See Figure 235.*

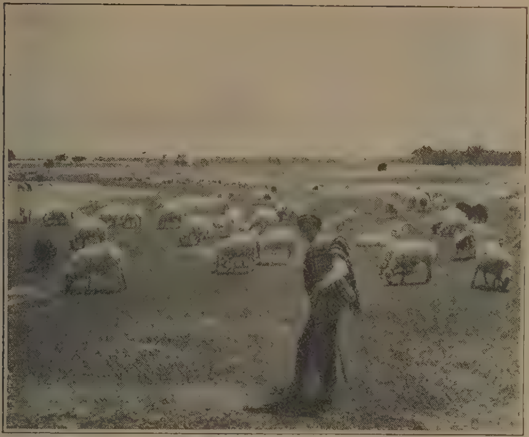
The northern part of the Meseta has a little more rain, and many of the people raise wheat and barley. Much more grain could be grown here if it were not for the fact that most of the farmers work in old-fashioned ways, harvesting the grain with sickles and scythes, and threshing it by trampling.

Spain's capital city. You would hardly expect to find a large city in the midst of the dry Meseta, yet Madrid is the largest city of Spain, with over three fourths of a million people. It began its growth long ago when a Spanish king made it the capital of the country because of its central location. When railroads were built, the capital was made the center of the Spanish railroad system, and that helped its growth still more.

Today Madrid is a busy, modern commercial center, with fine business buildings and streets crowded with traffic. To the visitor the strangest sights are the creaking oxcarts and the heavily loaded donkeys that are seen in the market centers of the city. They are reminders that almost within a stone's throw of the city many people are living and working much as their ancestors did long ago.

Madrid is a beautiful city, with many open squares, or *plazas,* planted with trees and flowers, and many beautiful buildings, among which is the marble palace where the king lives. It also has many institutions of learning and several museums which contain wonderful collections of pictures and other works of art. *See Figure 236.*

Spanish trade. You have already discovered that the leading exports of Spain are (1) "Mediterranean" products — wines, fruits and nuts, cork, and olive oil — and (2) ores and metals. Among the imports manufactured goods have the greatest total value, although raw cotton is the largest single import and the people buy considerable quantities of grain from other countries. These facts show



Photograph by Burton Holmes from Ewing Galloway

Figure 235. A Spanish shepherd tending his sheep on the Meseta. Why are many parts of the Meseta used for grazing rather than for raising crops?

that Spanish mills and factories do not supply the needs of the people, and that the farms do not provide all the grain that is needed.

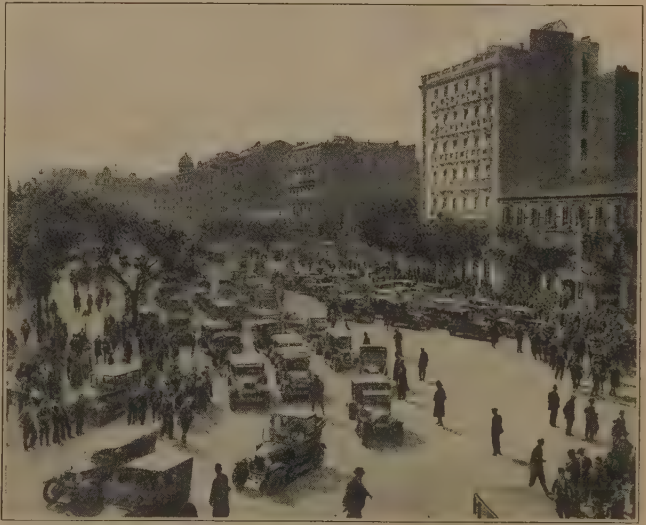
Looking forward. For many years Spain has been called a backward country. The people have been slow to adopt modern methods of farming, mining, and other work, and as a result they have not made the best use of their resources. But conditions are changing now. Manufacturing is increasing each year, and better methods of farming and mining are coming into use. This progress gives us reason to think that in time Spain will be a much more prosperous country than it is today.

Naming ports. See if you can name each port described below:

1. The leading port of Europe in the export of iron ore. Bilbao
2. A Portuguese port famous for its exports of wine. Oporto
3. Spain's copper-exporting port. Huelva
4. The leading port of Spain. Seville
5. A Spanish port which exports large quantities of oranges. Valencia
6. The leading port of Portugal. Lisbon

Giving reasons. Complete each of the following sentences by giving reasons for the fact which it states:

1. The coastal regions of Spain are more densely settled than the Meseta because --.
2. Parts of the Meseta are better suited to grazing than to farming because -----------.
3. Spanish and Portuguese farmers grow large quantities of grapes, olives, oranges, and other fruits because ---------------------------.
4. Northwestern Spain is the only part of the country where large quantities of corn are grown because ---------------------------------.
5. Wheat is the leading grain crop of Spain and Portugal because ---------------------.
6. Mining is important along the northern and southern margins of the Meseta because ---------------------------------------.
7. Large quantities of the ores and metals produced in Spain are exported because --.
8. Barcelona has greater advantages for manufacturing than Madrid because ------------.
9. Spain's iron-and-steel industry is located on the northern coast because -------------.
10. Spain and Portugal import foodstuffs because ---------------------------------.



Photograph by Ewing Galloway, N.Y.

Figure 236. One of the principal streets in Madrid, showing the crowded traffic. The trees at the left in the picture are on the border of one of the *plazas* of the city.

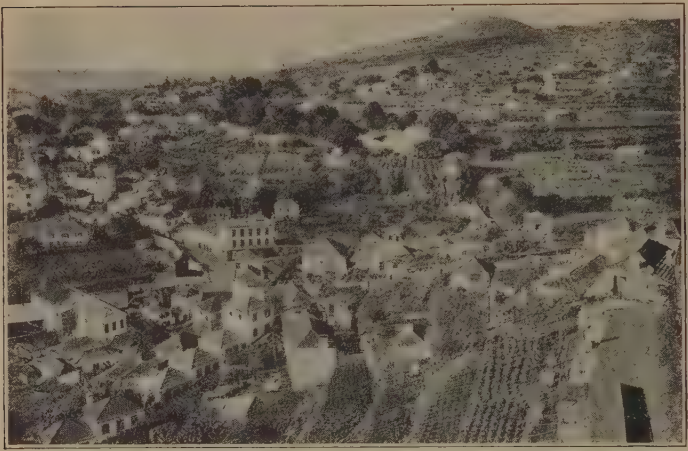


Figure 237. Part of Funchal, the capital and chief port of the Madeira Islands. Notice the terraced vineyards. The first grapevines were brought to the Madeiras by the Portuguese, who discovered the islands in 1419. How long ago was that?

2. Other Spanish and Portuguese Lands

On the map on page 234 find the lands outside the Iberian Peninsula which belong to Spain, and those which belong to Portugal. Judging from their location and extent, which country's possessions do you think are the more valuable?

Spanish and Portuguese islands. In the Mediterranean Sea are the Balearic Isles, which are part of Spain. They have fertile soils and the Mediterranean type of climate, and their chief products are fruits, wines, and olive oil.

Off the northwestern coast of Africa are the Canary Islands, which belong to Spain, and the Azores, the Madeira Islands, and the Cape Verde Islands, which belong to Portugal. The Canaries, the Azores, and the Madeiras all have a mild, moist climate, and the people raise fruits and early vegetables for European markets. The Cape Verde Islands are drier, and therefore they have fewer agricultural products for export.

The chief ports of all these groups of islands are coaling stations for ships and have cable stations for receiving and sending messages. *See Figure 237.*

Islands in the Gulf of Guinea. The Spanish and Portuguese also hold a number of small tropical islands in the Gulf of Guinea. Because of their hot, moist climate, these islands have many plantations where cacao and other tropical crops are grown. The Portuguese island of St. Thomas is especially noted for its large production of cacao, most of which is exported to Lisbon.

Spanish possessions on the mainland of Africa. The map on page 234 shows that Spain holds a very small portion of northern Morocco. Farther south on the coast of Africa is the Spanish colony of Rio de Oro. This colony has no commercial importance; for it is too dry for farming, and its mineral resources have not been developed.

On the coast of the Gulf of Guinea Spain holds the small area of Rio Muni, a hot, rainy, densely forested land. The native people, who are negroes, collect a few forest products such as rubber and palm kernels, which they sell to Spanish traders.

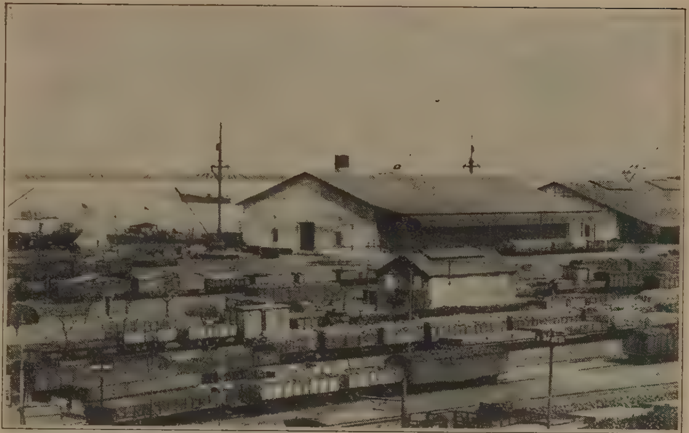
Portuguese Guinea. Find this little Portuguese colony on the map on page 50 (*B3*). The coastal lowland is forested, and the people there gather palm kernels and export palm oil. Farther inland there are grasslands, where the natives raise cattle which provide small quantities of hides for export.

Angola. Much farther south in Africa is the large Portuguese colony of Angola. From the map on page 48 and Figure 41 (p. 49) describe the surface and rainfall of Angola.

The dry coastal belt of Angola will remind you of the coastal desert of Peru, for farming is carried on only where water for irrigation can be obtained from streams, and the chief crops of the irrigated lands are cotton and sugar cane. Irrigated farming, however, is much less important here than in Peru, and the exports of cotton and sugar are very small.

Of somewhat greater importance is the coffee which is grown on plantations farther east in the northern half of Angola, where the rainfall is greater. From these plantations coffee is exported to Portugal, but not in very large quantities.

Much of Angola is savanna, or tropical grassland, and because of this more of the natives are engaged in raising cattle than in any other kind of work.



Photograph from Ewing Galloway, N. Y.

Figure 238. Part of the water front and railroad yards at Lourenço Marques, the capital and chief seaport of Mozambique. This Portuguese port handles some of the trade of the Union of South Africa. What reason for this can you discover from the map on page 50?

Mozambique. The most valuable of the Portuguese possessions is Mozambique, on the eastern coast of Africa. Use the map on page 48 and Figure 41 (p. 49) to compare Mozambique and Angola in surface and rainfall. What reason can you suggest for the greater importance of Mozambique?

Mozambique has plentiful rainfall for farming, because the southeast trade winds bring rain to it from the Indian Ocean. The climate is warm as well as moist, and on the coastal lowland the Portuguese have established plantations of sugar cane, cotton, coconuts, and other tropical products. As yet, however, they have not done so much to develop plantation agriculture as the British have farther north, and the exports of tropical products are small. The leading export is sugar, much of which goes to Portugal. *See Figure 238.*

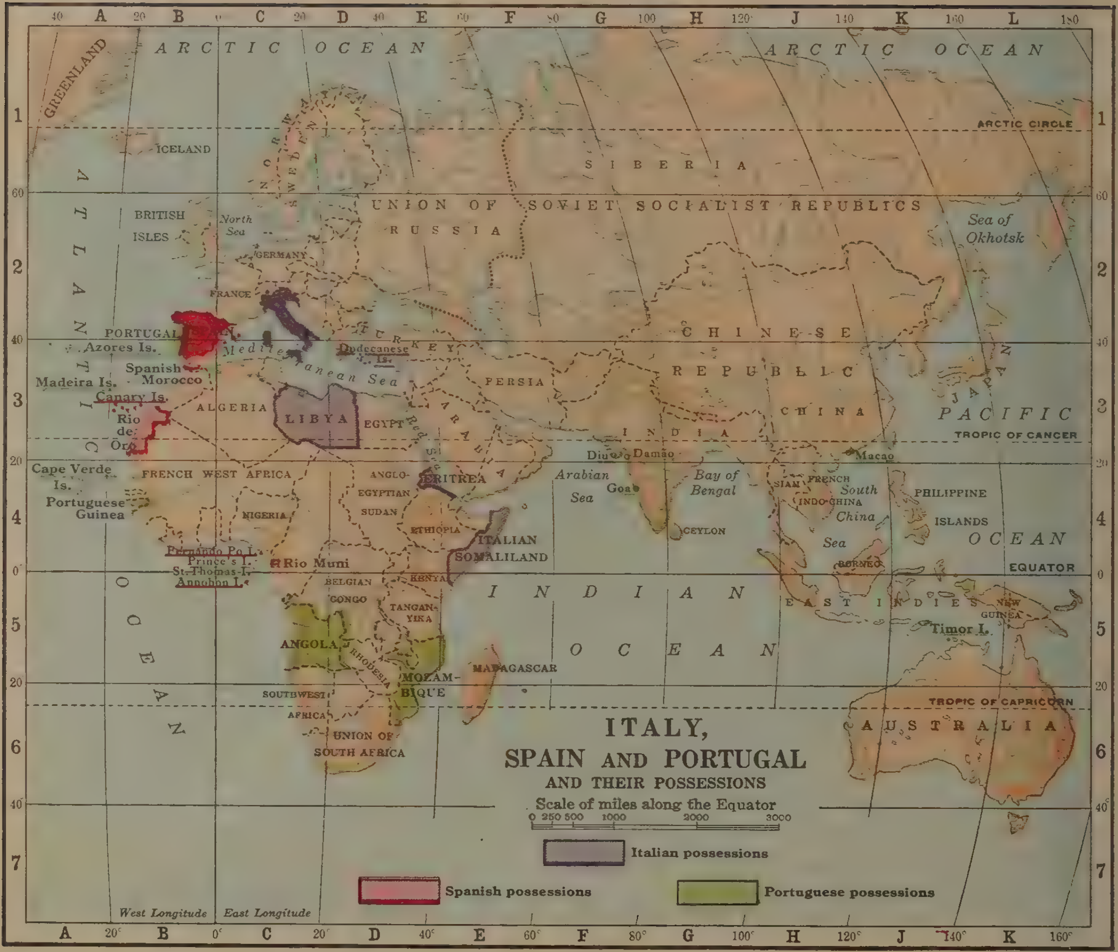
The interior of Mozambique is part of the grassy plateau region of East Africa. It is known to have coal and other mineral wealth, but as yet very little mining is carried on.

In Mozambique the Portuguese have a colony which could be made much more valuable than it is today. But in their possessions, as in the home country, the Portuguese have been much slower to develop the resources than have the British and the French.

Portuguese possessions in Asia. On the west coast of India the Portuguese have three tiny possessions, and in China they hold the island and city of Macao near the British island of Hong Kong. These possessions are trading centers, and with the eastern half of the little island of Timor in the East Indies are the only Portuguese lands in Asia. What country owns the western half of Timor? Dutch

Can you answer these questions?

1. Why are the possessions of Spain less valuable than those of Portugal?
2. Which possession of Portugal is the most valuable, and why? Mozambique
3. Why does Portugal export cacao to other countries of Europe?
4. What reasons can you give for the fact that the Spanish and Portuguese discovered the small islands off the northwest coast of Africa?
5. In what countries of the Americas do the people speak Spanish, and why?
6. In what country of the Americas do the people speak Portuguese, and why?


ITALY,
SPAIN AND PORTUGAL
AND THEIR POSSESSIONS
Scale of miles along the Equator
0 250 500 1000 2000 3000
Italian possessions
Spanish possessions
Portuguese possessions
ARCTIC OCEAN
ARCTIC CIRCLE
GREENLAND
ICELAND
SIBERIA
UNION OF SOVIET SOCIALIST REPUBLICS
RUSSIA
Sea of Okhotsk
BRITISH ISLES
North Sea
GERMANY
FRANCE
PORTUGAL
SPAIN
Azores Is.
Spanish Morocco
Madeira Is.
Canary Is.
Rio de Oro
Mediterranean Sea
Dodecanese Is.
TURKEY
PERSIA
ARABIA
CHINESE REPUBLIC
CHINA
JAPAN
PACIFIC OCEAN
TROPIC OF CANCER
ALGERIA
LIBYA
EGYPT
INDIA
Diu
Damão
Goa
Macao
Arabian Sea
Bay of Bengal
CEYLON
SIAM
FRENCH INDO-CHINA
South China Sea
PHILIPPINE ISLANDS
Cape Verde Is.
Portuguese Guinea
FRENCH WEST AFRICA
ANGLO-EGYPTIAN SUDAN
ERITREA
ETHIOPIA
NIGERIA
ITALIAN SOMALILAND
Fernando Po I.
Prince's I.
St. Thomas I.
Annobon I.
Rio Muni
BELGIAN CONGO
KENYA
TANGANYIKA
ANGOLA
RHODESIA
MOZAMBIQUE
MADAGASCAR
SOUTHWEST AFRICA
UNION OF SOUTH AFRICA
INDIAN OCEAN
ATLANTIC OCEAN
EQUATOR
BORNEO
EAST INDIES
NEW GUINEA
Timor I.
TROPIC OF CAPRICORN
AUSTRALIA
West Longitude
East Longitude
A B C D E F G H J K L
1 2 3 4 5 6 7
40 20 0 20 40 60 80 100 120 140 160 180
60 40 20 0 20 40

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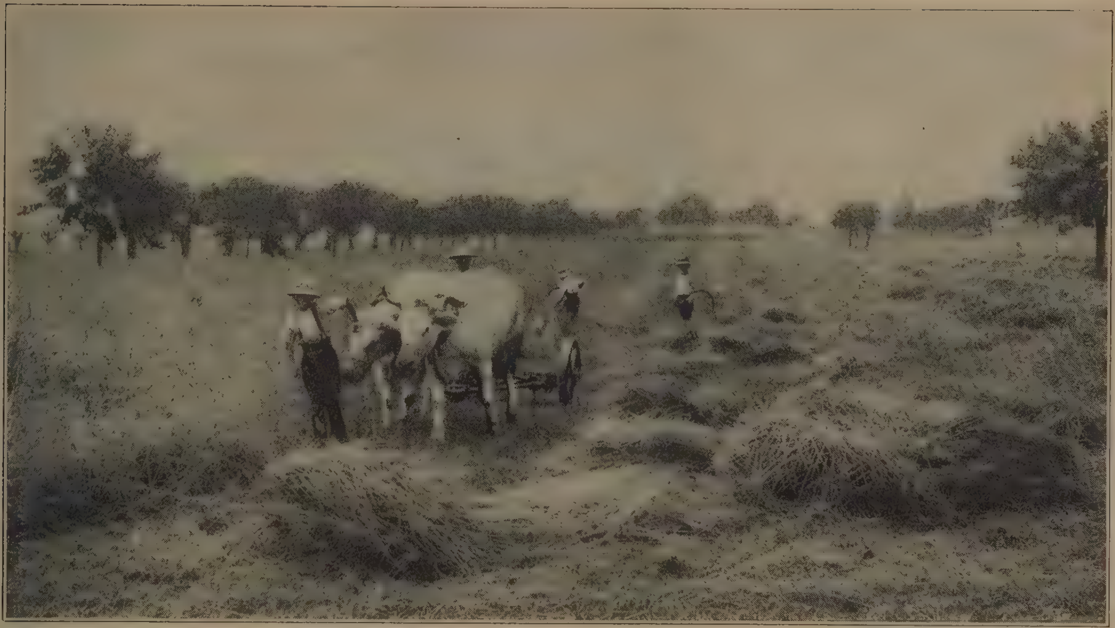
Testing yourself. Test your knowledge of the Iberian Peninsula by giving the right name to match each phrase below:

1. The plateau shared by Spain and Portugal. Iberian
2. The river at the mouth of which Oporto is located. Douro
3. The mountains which separate Spain from France. Pyrenees
4. The river on which Seville is located. Guadalquivir
5. The highest of the mountain ranges of southern Spain. Sierra Nevada
6. The river at the mouth of which Lisbon is located. Tagus
7. An important river valley in the northern part of Spain. Ebro

Some things to explain. Explain why

1. Madrid was chosen as the capital of Spain.
2. Madrid is the largest city of Spain today.
3. Barcelona imports large quantities of raw cotton from the United States.
4. The dry lowlands of Murcia and Valencia are "garden spots" of Spain.
5. Silk-manufacturing is important in Murcia and Valencia.
6. More land is used for crops in the northern part of the Meseta than in the southern part.
7. Seville and Lisbon have many cork factories.

Map work. Color the possessions of Spain and the possessions of Portugal on the map of Africa which you are making.



By Burton Holmes from Ewing Galloway, N. Y.

Figure 239. Italian farmers harvesting wheat in the Plain of the Po. Notice how level the land is in this region of Italy. The trees that you see in the picture are mulberry trees. What do they suggest about the work of some of the people in the plain? In what valley lowland of France did you see mulberry trees?

III. ITALY AND ITS POSSESSIONS

Foreword. Italy is by far the most important country of southern Europe today. It is much more densely populated than the others, and it carries on far more foreign trade. Do you know why? See how many reasons for Italy's importance you can discover as you study this chapter.

1. NORTHERN ITALY

The map on pages 226–227 shows that Italy may be divided into two sections: the northern, or continental, part, and the southern, or peninsular, part. What mountains form the northern margin of Italy? What plain lies between those mountains and the Apennines?

The Plain of the Po is one of the most thickly settled regions of Europe, and within it live two fifths of all the people of Italy. What reasons can you suggest for the great density of population in this plain?

A river-made plain. Long, long ago what is now the Plain of the Po was a great arm of the Adriatic Sea. Year after year the rivers from the bordering mountains washed mud and sand into it until at last it was filled with these fine rock materials and became dry land. The delta at the mouth of the Po shows that even now the plain is being extended into the Adriatic Sea.

In places the surface of the plain is remarkably level, and the river-laid soils are fine, deep, and fertile. The summer weather is hot, and the growing season is long, but snow sometimes falls in the winter. The plain is beyond the limits of the Mediterranean climate, and has rain in the summer.

A great farming region. As you might expect from its surface, soils, and climate, the Plain of the Po is a great farming region. It

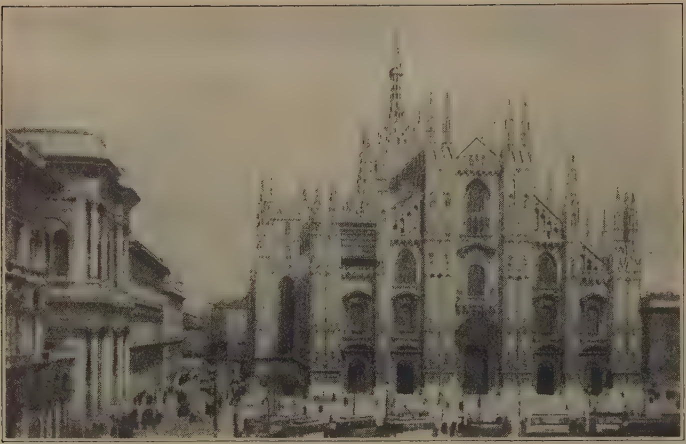


Figure 240. The cathedral in Milan. Because of its location in the Plain of the Po, Milan has been an important city for hundreds of years. The building of the cathedral was begun in 1386.

is one of the leading wheat-growing regions of Europe, one of the few important corn-growing regions, and the only important rice-growing region of the continent. All three of these crops provide large quantities of food for the Italian people, but even so, the country is so densely populated that much wheat and some corn are imported.

Most of the farmers of the plain use farming machinery and do much of their work in modern ways. Many irrigate their fields so that their crops get exactly the right amount of moisture, and some get as many as three or four crops a year from the same land. *See Figure 239.*

On the northern and southern margins of the plain much of the land is used to pasture cattle, and in the south, especially, dairying is very important. Among the products of the dairying industry are Gorgonzola and Parmesan cheeses, for which Italy is famous and which are exported in large quantities.

Mulberry trees and silk. Along the western and northern margins of the plain the climate is mild enough for mulberry trees, and many of the people raise silkworms. The cocoons are sent to factories, where the fibers are "reeled" by machinery. Reeling means unwinding the delicate fibers from the cocoons and twisting them together to make the strands of raw silk.

A great manufacturing region. Besides being a rich farming region, the Plain of the Po is one of the leading manufacturing regions of Europe. It has no coal or iron ore,— in fact, all Italy is poor in these mineral resources,— but the large population provides abundant labor, or workers, for factories, and the location of the plain makes it easy for the manufacturers to market goods in all parts of Europe. The lack of coal is partly made up for by electric power from hydroelectric plants on the swift-flowing streams from the Alps, but large quantities of coal are imported, chiefly from Great Britain.

Textile-manufacturing. In all the larger cities of the plain there are textile mills, and textile-manufacturing is the leading industry. This work began long ago with the manufacture of silk goods from raw silk produced in the plain, but today there are large numbers of cotton mills and woolen mills as well as silk mills. The newest kind of textile-manufacturing is the making of goods of rayon, or artificial silk. In this work, as in the making of real silk goods, Italy holds high rank among the countries of the world.

The leading textile centers are the two largest cities of the plain, Milan (Milano) and Turin (Torino). Find these cities on the map on pages 140–141 (*L6* and *K6*). Notice how conveniently they are located to obtain supplies of raw materials and to market manufactured goods through the port of Genoa. To this port come large quantities of cotton, chiefly from the United States, and much wool from South America and Australia.

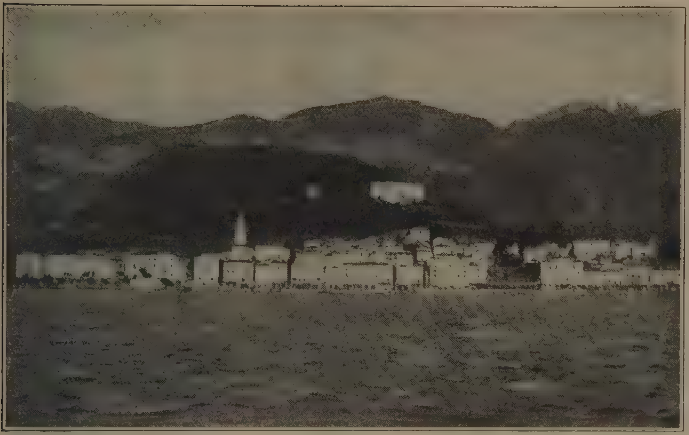


Figure 241. **Bellagio, a town on the shore of Lake Como in the Italian Alps. The blue water, the green wooded hills, and the snow-capped mountains make this one of the beauty spots of Europe.**

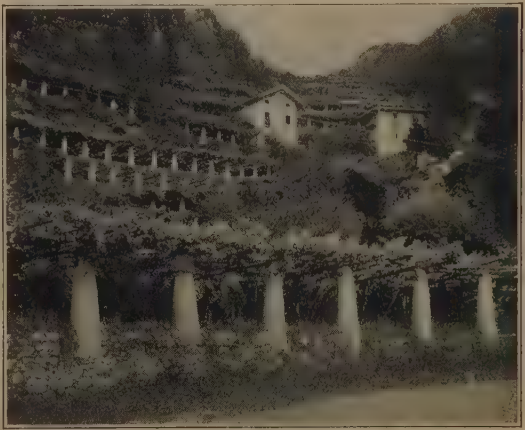
Other kinds of manufacturing. Although textiles are the most important manufactured products of the plain, many other kinds of manufacturing are carried on. Large quantities of iron and steel are imported and used in the manufacture of many different products. For example, Milan makes locomotives and many kinds of machinery, and Turin turns out large numbers of steel railroad cars and of automobiles. Still other important manufactures are chemicals and glass.

The growth of cities in the plain. The largest cities of the Plain of the Po are Milan, with nearly a million people, and Turin, with more than half a million. Turn to the map on pages 144–145 and notice that both these cities (*G6*) are on railroad lines which pass through tunnels in the Alps, connecting northwestern Europe with the Mediterranean. Milan has become the larger city chiefly because it is the place where two of these north-south railroad lines meet and cross the main east-west railroad line through the Plain of the Po. *See Figure 240.*

In this plain, as in all industrial regions, manufacturing has greatly increased the population and the demand for foodstuffs in the cities, providing work for more farmers in the country districts. An increasing farm population, in turn, means larger home markets for manufactured goods. Thus manufacturing and farming have grown together, each helping the other.

The Alpine region. From the Plain of the Po the Alps rise on the west and the north, reaching heights of over 15,000 feet in the peaks of Mont Blanc and Monte Rosa. Find these peaks on the map on pages 140–141 (*K6*). Find also Lake Como, Lake Maggiore, and Lake Garda, farther east. The district of the Italian lakes is one of the most beautiful parts of Europe, and thousands of tourists from all over the world visit it each year. *See Figure 241.*

In the valleys among the Italian Alps and on the sunny hillsides along the northern margin of the plain the people raise grapes and olives and make wine and olive oil. Many of the vineyards and olive groves are on terraces on the mountain slopes. *See Figure 242.*



By Burton Holmes from Ewing Galloway, N. Y.

Figure 242. **Terraced vineyards on a mountain slope in the Italian Alps. The south-facing slopes of the Alps are warm and sunny most of the year.**

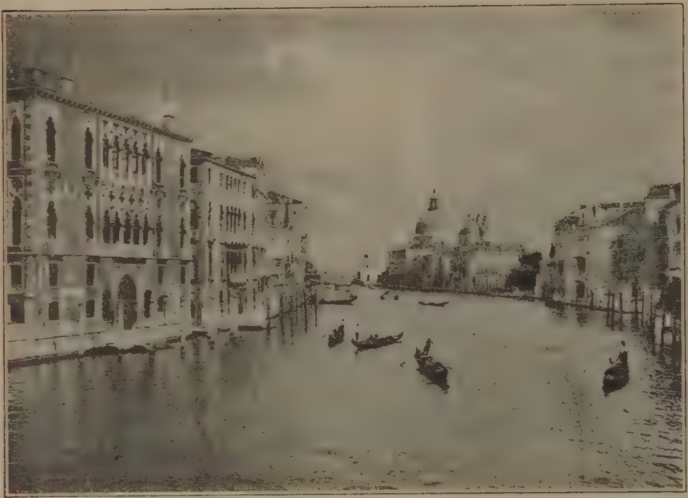


Figure 243. The Grand Canal in Venice. In the distance is one of the churches, and at the left is an old Italian palace. The posts in front of the palace are for tying gondolas.

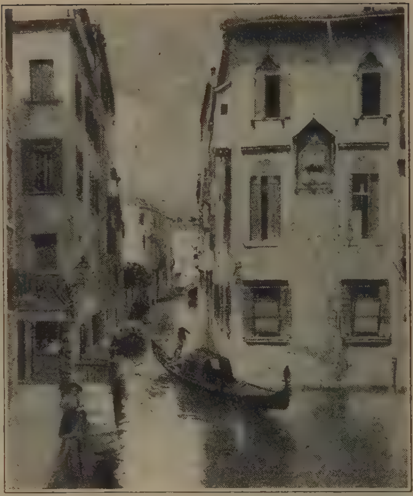


Figure 244. One of the smaller canals, or "water streets," in Venice, bordered by houses and shops.

On the higher slopes of the Alps the people make their living mostly by keeping cows and goats, just as so many do in neighboring parts of Switzerland and Austria.

Adriatic ports. At the northern end of the Adriatic Sea Italy has three seaports: Venice (Venezia), Trieste, and Fiume. Find these cities on the map on pages 140–141 (*N-06*). Before the World War Trieste and Fiume were ports of Austria-Hungary; but now that the lands of Austria-Hungary have been divided among several other countries, Trieste and Fiume have lost much of their trade.

Fiu ma

Venice (Venezia). There is no other city in the world quite like Venice. It is built on a large number of small islands in a shallow lagoon, or bay, just north of the delta of the Po. One railroad, passing over a long bridge, connects the city with the mainland.

Most of the islands are too small to have many streets, and the canals, or waterways, between them are the main highways of the city. Most of the houses face the canals, and many of them rise directly from the water. Hundreds of bridges connect the various islands, but the principal means of transportation in the city are long, narrow boats called *gondolas. See Figures 243 and 244.*

Long ago, before the route to the Orient around the southern tip of Africa was discovered, Venice was a great commercial port, serving as a gateway for trade between Europe and eastern Asia. Venetian merchants sent their ships to the eastern end of the Mediterranean, loaded with European goods to be exchanged for those which came overland by camel caravan from India and the Far East. This "carrying trade" brought wealth and power to Venice, and the people built beautiful palaces and public buildings, many of which are standing today.

Venice is now a much less important port than it once was, for much of the trade of Europe with the Orient is carried on by ships which sail directly from northern ports through the Mediterranean and the Suez Canal to India and the Far East. It is, however, an important Italian port, serving as the eastern gateway for the Plain of the Po. From the map (pp. 140–141) name its leading exports.

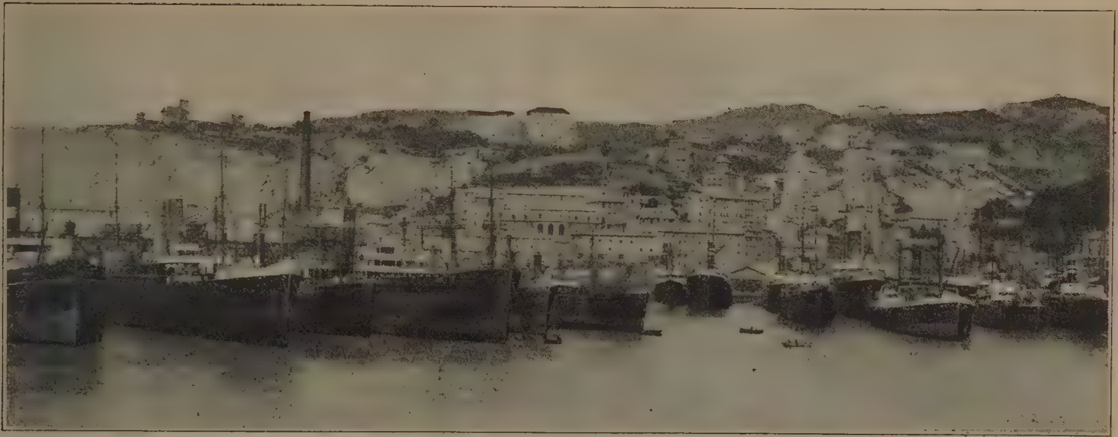


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Figure 245. Part of the water front at Genoa, showing ocean freighters from many different countries. Genoa, in Italy, and Marseille, in France, have much the same advantages for carrying on trade with the Americas and with the Far East, and they are the two most important ports on the Mediterranean Sea.

Venice is so beautiful and so interesting that thousands of tourists visit it each year. Perhaps you can find a book which tells about the fine old palaces, the art museums, and the beautiful churches there.

Genoa (Genova). In the days when Venice was a great commercial port, Genoa was its only rival. Today Genoa has outstripped Venice in trade and population and is the leading seaport of Italy. Find Genoa on the map on pages 140–141 (*L6*) and see if you can discover any reasons for its growth.

Because of its location, Genoa serves as the ocean gateway for the western part of the Plain of the Po — the part where Milan and Turin are located and manufacturing has developed to the greatest extent. For this reason it imports more of the raw materials, fuels, and foodstuffs needed in the Plain of the Po than does Venice, and exports more of the manufactured products. *See Figure 245.*

Another reason why Genoa is a more important port than Venice is that its location is such that it handles much of the foreign trade of Switzerland. Use the map on pages 144–145 to show why this is so.

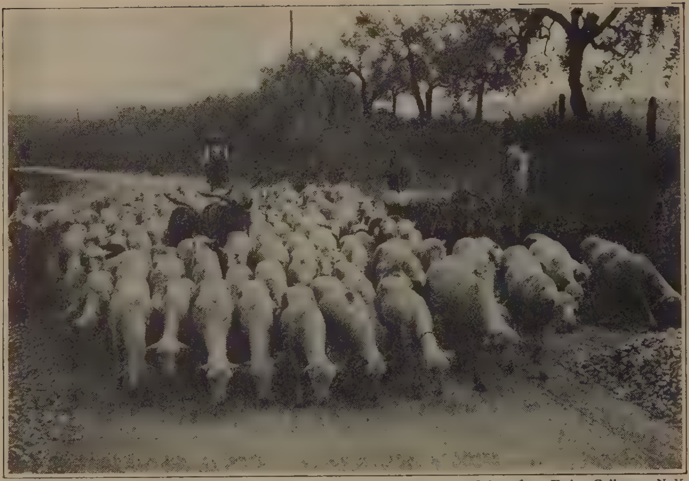
As you would expect, Genoa is also a busy industrial city, with cotton mills, shipbuilding yards, and many other manufacturing plants. Like Marseille, it imports large quantities of oil-seeds which are used for making vegetable oils and soap.

The Riviera. Extending westward from Genoa is the warm, sunny Riviera coast which Italy shares with France, and which attracts such large numbers of winter visitors. What do the people of this region do for a living besides caring for the needs of visitors?

An export and import test. From the maps on pages 140–141 and 226–227 make a list of the exports of Genoa and another of the imports. Then answer the following questions:

1. Among the imports, what two are for use wool-coal
in the textile mills of northern Italy? 2. What two suggest that Italy is poor in fuel resources? 3. What one proves that Italy needs more grain than the farmers produce?

4. Among the exports, which ones prove that Italy produces a surplus of certain foodstuffs? 5. Which ones suggest Italy's importance as a manufacturing country? 6. What raw material for textile-manufacturing does Italy produce in sufficient quantities to supply the home needs and provide a surplus for export?



By Burton Holmes from Ewing Galloway, N. Y.

Figure 246. An Italian shepherd driving his sheep and goats to pasture in the Apennines. The sheep of the Italian peninsula help to supply wool for manufacturing, and the goats help to provide the people with milk. Why are there more sheep than cattle in Italy?

2. The Italian Peninsula and Sicily

From the map on pages 226–227 describe the surface of the Italian Peninsula and Sicily. What does Figure 223 (p. 219) tell about their climate? How do you think the work of the people in the "Mediterranean" lands of Italy differs from work in the Plain of the Po? As you study this section, find out whether or not your answer is correct.

Farm lands and pasture lands. Although the Italian Peninsula and Sicily are largely mountainous, more of the people are engaged in farming than in any other kind of work. The farms are small, and many of the farmers are very poor; but altogether they produce large quantities of wheat, vegetables, and the usual "Mediterranean" fruits.

Much of the wheat grown in this part of Italy is especially well suited to the manufacture of macaroni, which is one of the principal foods of the Italian people. In Naples and other cities there are factories where macaroni is made for home use and for export.

On the map on pages 226–227 find the places where Italian farmers raise large quantities of citrus fruits. Lemons from Sicily and oranges from the "toe" of Italy are among the important exports of the country, going chiefly to markets in northern Europe.

Nearly every farmer of southern Italy has a small vineyard and makes wine for family use, and many have olive groves and press their own olive oil. In certain places fine qualities of olive oil are made on a larger scale for export. The rougher lands and those with the poorer soils are used largely for pasturing sheep and goats. *See Figure 246.*

Mineral products and water power. In the northern part of the Apennines are the famous marble quarries of Carrara. Carrara marble is pure white and very fine, and it is shipped to many distant lands. A little farther south there are mercury mines. These, with others north of Trieste, make Italy the rival of Spain in the production and export of mercury.

Lignite is mined in the Apennines for household fuel, but little use is made of it for manufacturing. Instead, the Italians are developing the water power of the Apennines. A number of hydroelectric plants have been built, and more are planned. Power from these plants has led to an increase in manufacturing in the Italian Peninsula, but far less manufacturing is carried on here than in the northern plain. *See Figure 247.*

The greatest handicap to manufacturing in Italy is the lack of coal and metal ores. Iron ore is mined in a few places, but the richest mines, in the little island of Elba, are giving out. In time the Italians hope to make up largely for the lack of coal by greater use of hydroelectric power, but for iron, copper, and other metals they will probably always have to depend chiefly on imports.

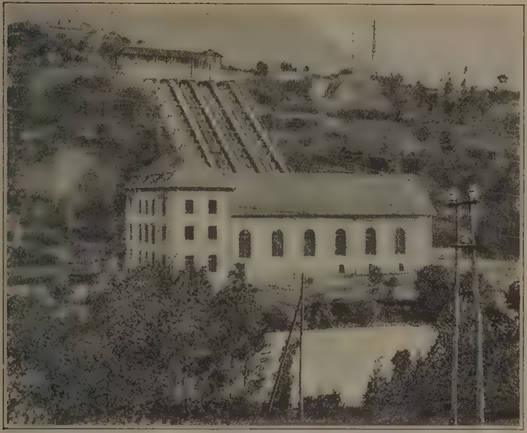

By Burton Holmes from Ewing Galloway, N.Y.

Figure 247. A hydroelectric plant in Italy. In the Alps and in the Apennines the Italians are harnessing the rivers to provide power for manufacturing.

Florence (Firenze) and the Arno Valley. Almost every visitor to Italy goes to Florence, for this old city has some of the most wonderful art galleries in the world. Find Florence on the map on pages 140–141 (*M7*), and notice its location on the Arno River. The valley of the Arno is not large, but it is one of the richest farming regions in the Italian Peninsula. Its people have always been prosperous, and that is one reason why Florence long ago became a center of art and learning. *See Figure 248.*

Rome (Roma). On the map on pages 226–227 find Rome, the capital of Italy (*F2*). Notice its location on the Tiber River, about halfway between the northern and southern ends of the Italian Peninsula. From this central location the Romans of long ago conquered all Italy and then extended their power, little by little, until they controlled all the Mediterranean borderlands.

For more than two thousand years Rome has been one of the most famous cities of the world, first as the capital of the Roman Empire, and later as the headquarters of the Roman Catholic Church. For many hundreds of years it has been the home of the Roman Catholic Popes.

Rome is built on a group of low hills bordering the Tiber, and on the margin of a small coastal plain. In the days of the Roman Empire the plain was thickly settled by farmers who helped to provide the great city with food. In the course of many centuries it became marshy and unhealthful, and for a long time it was almost deserted. Now the Italians are draining it and cultivating it again.

Rome is the third largest city of Italy, but it has not yet become a manufacturing center. Its people are engaged in many kinds of work connected with business and government, and with the entertainment of the thousands of visitors who come to the city each year. One may spend weeks visiting the beautiful churches of Rome and the ruins of buildings which go back to the old Roman times, and still not see all that this Italian city offers of religious and historic interest.

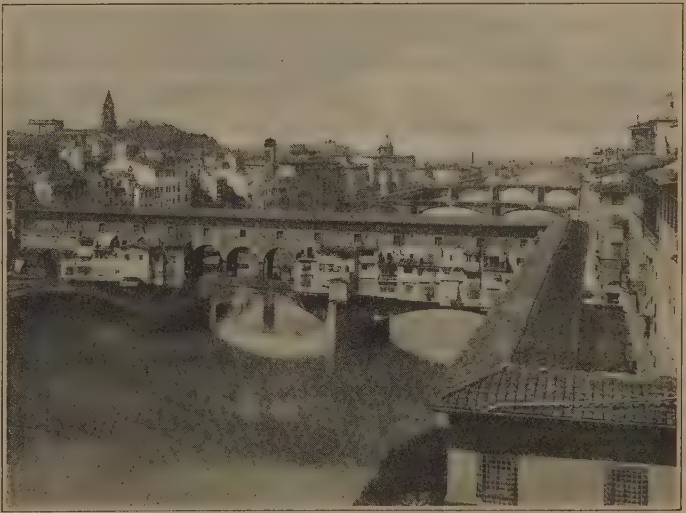


Figure 248. The Ponte Vecchio, or "Old Bridge," in Florence. The bridge is lined with little shops, and forms part of a passageway connecting two famous art galleries on opposite sides of the Arno.

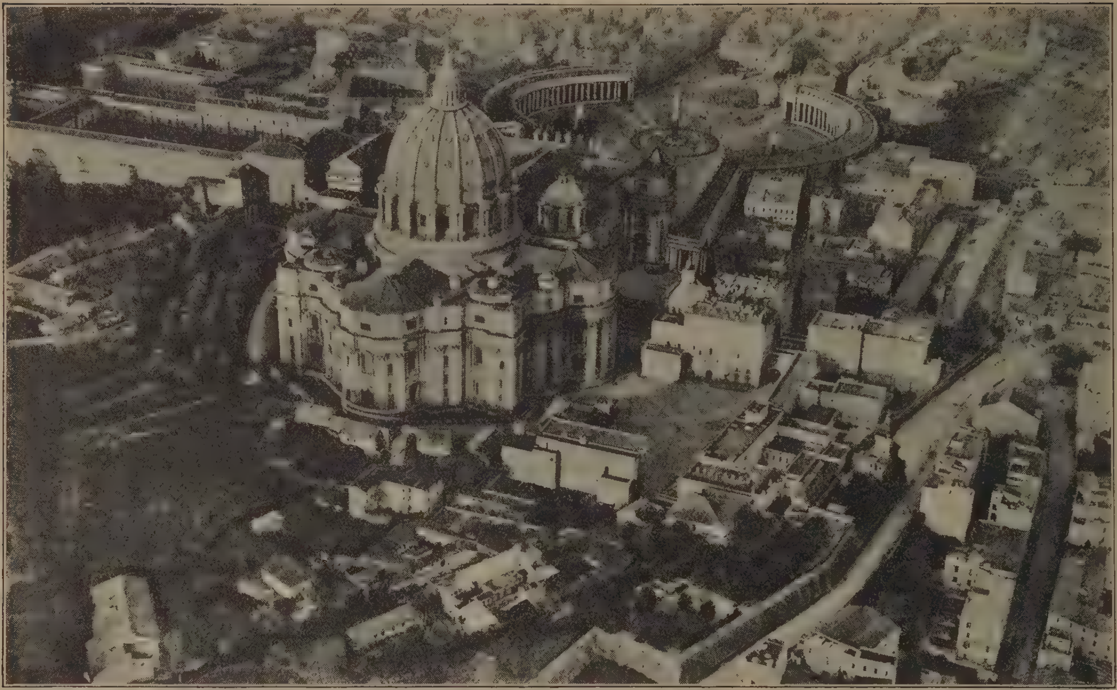


Figure 249. An airplane view of the Vatican City, in Rome. The large domed building is St. Peter's Church, and beyond it, at the left, is the Vatican. Both buildings contain many wonderful works of art. The tall column in the open *piazza* in front of St. Peter's was brought to Rome from Egypt about 1900 years ago.

The Vatican City. Within the boundaries of Rome is the small independent Vatican City, which the Italian government in 1929 placed entirely under the control of the Roman Catholic Church. Within this city is St. Peter's Church and the palace of the Vatican, which is the home of the Pope. *See Figure 249.*

A famous volcano. Many visitors to Europe get their first glimpse of Italy as their ship steams into the beautiful Bay of Naples. Long before the ship moves into one of the docks that line the water front, the passengers are on deck with field glasses, looking at Vesuvius, the great volcanic mountain a few miles east of Naples. Usually there is a cloud above the mountain, for Vesuvius is an active volcano. The cloud is due to the water vapor which rises in the throat of the volcano, passes into the air, and is cooled.

At times the hot liquid lava in the crater of Vesuvius rises and overflows the rim. As it creeps down the mountain slope it spreads over fields, highways, and even villages, and sometimes the people have to flee for their lives. For centuries Vesuvius has been more or less active, and at times it has caused much damage. In the year 79 a great eruption from this volcano buried the cities of Pompeii and Herculaneum at its base in a huge shower of hot mud and ashes. For a long, long time these cities were almost forgotten. Now they have been excavated, or uncovered, and the streets and houses tell much of the life and work of the Romans of long ago.

Naples (Napoli). Locate Naples on the map on pages 226–227 (*F2*). We shall find this seaport of southern Italy a busy, crowded city, surrounded by farm lands where the people raise the usual Mediterranean crops. It is the largest city of Italy in population, and it handles much of the foreign trade of the southern part of the country. It is not so important a port as Genoa, however. Can you explain why?

In recent years Naples has become an important industrial city. The growth of manufacturing has been due in large measure to the development of hydroelectric power in neighboring parts of the Apennines, and Naples now has textile mills, sugar refineries, shops for making engines for motor cars, and other manufacturing plants. *See Figure 250.*

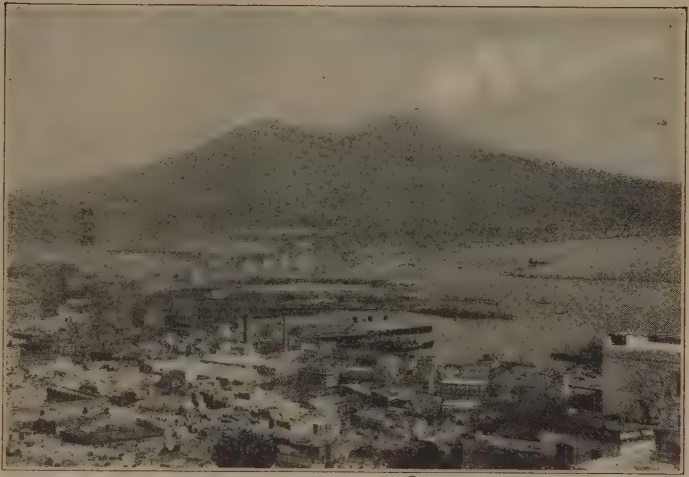


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Figure 250. The harbor of Naples, with Mount Vesuvius in the background. Notice the cloud of steam rising from this famous volcano. Can you find an ocean liner and some factories in the picture?

Sicily. The map shows that Sicily is separated from the "toe" of Italy only by the very narrow Strait of Messina. In the crust of the earth beneath this strait there are deep fissures, or cracks, and along these cracks movements of the crust which result in earthquakes frequently take place.

On the map on pages 226–227 find Mount Etna in Sicily (*F3*), and give its height. This great mountain peak is a volcano, and, like Vesuvius, is active from time to time. Near the base of Mount Etna there are valuable sulphur deposits, and the mining and preparation of sulphur for export provides work for many people. *See Figure 251.*

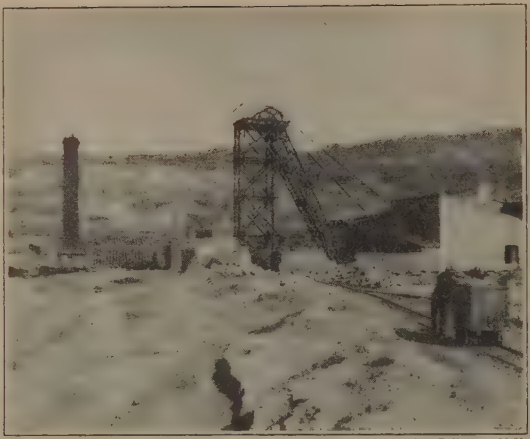
Figure 9 on page 13 shows that Sicily is crowded with people. Most of them are farmers, and, as you would expect, their principal crops are wheat and Mediterranean fruits. Palermo, the largest city, exports large quantities of Sicilian lemons.

Sardinia. Turn to the map on pages 226–227 and find the island of Sardinia, which belongs to Italy (*E2–3*). Like its neighbor, Corsica, Sardinia is a mountainous island with the Mediterranean type of climate, and most of the people are farmers. Sardinia has considerable mineral wealth, but the roads are so poor that only a few mines have been opened. From the map on pages 226–227 name the chief mineral products of the island.

Italy's trade. Italy is the only Mediterranean country where manufacturing is important enough to require large imports of cotton, wool, iron, and other raw materials. Lack of fuel resources makes necessary large imports of coal and mineral oils, and the dense population requires more wheat and corn than are produced in the country.

In return for these and other imports, Italy has a variety of products for export. First come its surplus manufactures, especially cotton, silk, and rayon goods; next, its surplus farm products, chiefly fruits and nuts, vegetables, rice, and cheese; then its surplus raw silk; and finally, its surplus mineral products — marble, sulphur, and mercury.

With such a large and varied trade, it is natural that Italy should buy and sell in many parts of the world. From our own country Italy buys large quantities of cotton, wheat,



Photograph by Ewing Galloway, N.Y.

Figure 251. A sulphur mine in Sicily. The sulphur is mined about 700 feet beneath the ground, and is hoisted to the surface by machinery run by electricity.

mineral oils, and metals, and in return we buy many Italian products, especially cheese and fruits. Other countries which have a large share in Italian trade are Germany, France, Great Britain, and Switzerland.

Some points to remember. In summing up the points which help to explain why Italy has become such an important country we should remember

1. The northern plain, with its advantages for farming and manufacturing.
2. The Mediterranean climate of Sicily and most of the Italian Peninsula, which makes it possible for the people to carry on farming the year round.
3. The water power, which makes up in part for the lack of coal.
4. The dense population, which provides abundant labor for all kinds of work and large home markets for manufactures.
5. The central location of Italy in the Mediterranean Basin, making it easy for the people to trade with all parts of the world.

We cannot, however, explain Italy's development by these facts alone, for the country has several serious handicaps, the greatest of which is its lack of coal and its small resources of iron ore. We have seen that the Italian people have been quick to make good use of the resources which they have, and to find ways to overcome their handicaps. This, perhaps more than anything else, is why Italy is one of the leading countries of Europe.

3. The Italian Possessions

On the map on page 234 find the group of islands in the Ægean Sea which belong to Italy. Find also the three Italian colonies in Africa. Locate these colonies on Figure 41 on page 49 and describe their rainfall. What does that suggest about their value to Italy?

The Dodecanese Islands. Although these islands in the Ægean Sea belong to Italy, the people are Greeks. Most of them are farmers, and they raise unusually fine grapes and vegetables for export, chiefly to Egypt.

Eritrea and Italian Somaliland. As you discovered from the map, Eritrea and Italian Somaliland are very dry lands, and for this reason they are of little commercial value. Most of the people are nomadic herdsmen who wander about with their cattle, sheep, camels, and goats.

Libya. The largest of Italy's colonies is Libya, directly across the Mediterranean Sea from the homeland. The interior of this colony is part of the Sahara Desert, but along the coast there is a little more rainfall, and the people raise Mediterranean fruits and barley. In the waters off the Libyan shores large numbers of sponges are gathered for export.

In the Libyan desert are some of the richest oases of northern Africa, where dates of especially fine quality are grown. Camel caravans carry the dates to the seaport of Tripoli for export. Tripoli is a starting point for a number of different caravan routes which cross the Sahara Desert to Timbuktu and several other towns of the Sudan.

Map work. Color the possessions of Italy on the map of Africa which you are making.

Making choices. Choose the ending which makes each sentence below correct:

1. Rome, the capital of Italy, is located on the
Po River. Arno River. Tiber River.

2. The leading seaport of Italy is
Genoa. Naples. Venice.

3. The city of Italy which is located on islands and has "water streets" is
Florence. Venice. Milan.

4. The largest manufacturing city of the Plain of the Po is
Milan. Turin. Palermo.

5. The Vatican City is in
Venice. Rome. Florence.

6. The famous mountain near Naples is
Mt. Etna. Mt. Vesuvius. Mont Blanc.

7. Italy shares the Riviera coast with
Yugoslavia. Switzerland. France.

8. The two large islands in the Mediterranean which are parts of Italy are
Corsica and Sardinia. Sardinia and Sicily. Sicily and Crete.

9. Most of the Italian possessions are in
Africa. South America. Asia.

Sentences to complete. Complete the following sentences by giving reasons:

1. The Plain of the Po is one of the best farming regions in Europe because Soils rich fertile [illegible].

2. This plain is one of the few important corn-growing regions of Europe because ------ long growing season --------.

3. The farms are smaller and the farmers poorer in peninsular Italy than in the northern plain because [illegible] --------.

4. Peninsular Italy and Sicily are the parts of the country where most of the "Mediterranean" crops are grown because ------------.

5. Grapes and olives can be grown on the south-facing slopes of the Alps in northern Italy because ------------------------------.

6. Far more cattle are raised in the Plain of the Po than in peninsular Italy because ------ ------------------------------------.

7. Sheep and goats are the kinds of live stock raised in largest numbers in peninsular Italy because ------------------------------.

8. The Plain of the Po is one of the important industrial districts of Europe because ---- ------------------------------------.

9. Textile-manufacturing made an early start there because --------------------------.

10. The growth of manufacturing in the Plain of the Po has increased the prosperity of the farmers because ------------------------.

Something to discuss. It is rather unusual for countries which are poor in coal and iron ore to carry on manufacturing on a large scale. Italy and Switzerland are exceptions to this rule. Discuss with your classmates the reasons why these two countries have so many important manufacturing industries. In this discussion you will find it helpful to answer the following questions:

1. What advantages have Italy and Switzerland for obtaining raw materials and marketing manufactured goods?

2. Why are both countries well supplied with labor for manufacturing?

3. How do they both make up in part for their lack of coal?

A possessions test. 1. Name each of the Italian possessions described below:

a. The Italian islands in the Ægean Sea. Do

b. The Italian colony in Africa most of which is in the Sahara Desert. Libya

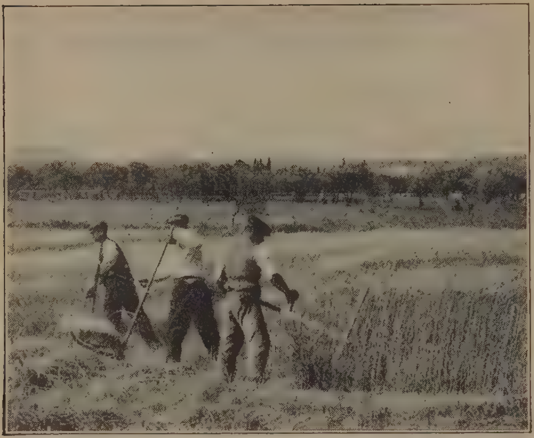
c. The Italian colony on the Red Sea. Eritrea

d. The Italian colony bordering the Indian Ocean. Italian Somaliland

2. Explain why the African possessions of Italy are less valuable than those of Great Britain and France.

Special credit work. 1. Try to find a book which tells about the destruction of Pompeii, or about the ruins of this old Roman city as they look today. Report to your class on one of these subjects.

2. Find out all you can about rayon — what it is made of and how it is used — and report to your class.



Photograph by Ewing Galloway, N. Y.

Figure 252. Greek farmers harvesting wheat. They are using scythes fitted with old-fashioned " cradles," by means of which they can lift the grain as they cut it and drop it in piles on the ground.

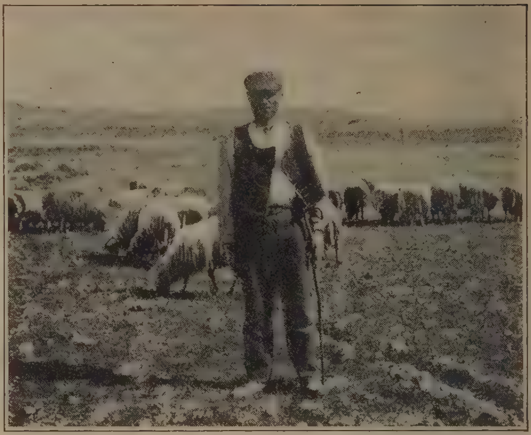


Figure 253. A Greek shepherd tending his sheep. The sheep are grazing on land in northern Greece which, although it is level enough for farming, has such stony soil that it cannot be used for crops.

IV. THE BALKAN COUNTRIES

1. FOREWORD

A bridge land. The map on pages 6–7 shows that the Balkan Peninsula forms a bridge between Europe and southwestern Asia. Across this bridge people have passed back and forth for many centuries. As you know, the first civilized people in the Balkan Peninsula were the Greeks, who occupied the southernmost part. Later other peoples moved into the peninsula from the northeast.

Because the Balkan Peninsula is so mountainous, no one group of people has succeeded in keeping control of it, and so it has come to be divided among several different countries. The people of each country speak a language of their own, and even within some of the countries themselves there are differences of language which make it hard for the people of one section to understand those of another.

You already know that the six countries which lie partly or wholly in the Balkan Peninsula are Greece, Albania, Yugoslavia, Rumania, Bulgaria, and Turkey. Locate these countries again on the map on pages 226–227. Which ones border the Mediterranean Sea? the Black Sea? Which one occupies the peninsula of Anatolia, with only a small part of its area in the Balkan Peninsula?

Hindrances to development. All of these countries are rather poorly developed. One reason is that for many years they suffered from wars and weak governments. Another is that much of the land is so mountainous that few railroads have been built and most of the roads are poor. Without modern means of transportation it is almost impossible for any people to make good use of their resources.

Most of the people of the Balkan Peninsula and Anatolia are farmers or herdsmen. Large numbers of the farmers do their work in the simple ways of long ago, and many have never even seen modern farming machinery. Some of the herdsmen wander about with their flocks and herds, living a half-nomadic life.

Albania. The smallest of the Balkan countries is Albania, a land of rugged mountains with few good roads, only one short railroad, and little foreign trade. Along the coast there is a lowland where the people carry on farming of the Mediterranean type. Tirana, the capital city, is located on the inner margin of this coastal lowland. The people of the interior of the country are mountaineers who make their living chiefly by raising cattle and sheep.

European interest in the Balkans. Although the Balkan countries are poorly developed, they are of great interest to the larger and stronger countries farther northwest in Europe. As you study this chapter, find reasons for this interest.

2. GREECE

Turn to the map on pages 226–227 and explain why Greece is sometimes called "a peninsula of peninsulas." The long, irregular coast line, with its many gulfs and bays, long ago led the Greeks to make use of the sea. Today, as in olden times, many of the Greeks are sailors and many are merchants, and Greek ships carry on much of the trade between the countries bordering the Black Sea and the eastern part of the Mediterranean.

The map shows that Crete and most of the small islands in the Ægean Sea belong to Greece, as do Corfu and the Ionian Islands off the west coast of the country. What can you say about the surface of these islands?

From the products and exports of Greece, what can you tell about the use of the land? about the climate?

Mediterranean climate and products. Figure 223 (p. 219) shows that nearly all of Greece has the Mediterranean climate. The land is hilly and mountainous, but in the sunny valleys the people raise Mediterranean fruits and winter wheat and barley. *See Figure 252.*

Along the Gulf of Corinth and the west coast of Greece the farmers grow a special variety of small, black, seedless grapes which are dried in the sun and called currants. Large quantities of currants are shipped to distant lands from the seaport of Patras, and they hold second place among the exports of Greece. Raisins, figs, wines, olives, and olive oil are also exported.

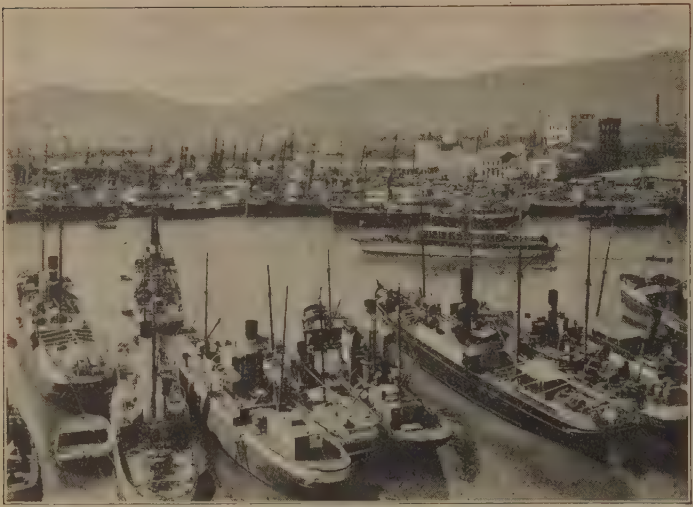
Although many Greek farmers raise wheat, the total production falls far short of the needs of the country, and wheat and flour are the leading imports.

An important export crop. In the part of Greece bordering the northern end of the Ægean Sea there are several fertile lowlands where, in addition to grain and fruit, large quantities of tobacco are grown. Tobacco is by far the most valuable export of Greece, and it is shipped to many other countries for use in making cigarettes.

Sheep and goats. Large numbers of sheep and goats are pastured among the mountains of Greece, for these animals can graze on slopes that are too steep and rocky for farming, and on lands where the soils are too poor and stony for crops. They provide the people with milk, cheese, and wool, and with considerable quantities of skins for export. *See Figure 253.*

Mining and manufacturing. Metal ores have been discovered in various parts of Greece, but mining has developed slowly. That is partly because there are not many railroads, and partly because Greece has no coal for smelting metal ores. At present the most valuable mineral product is lead. Find the lead mines on the map on pages 226–227 (*H3*).

The lack of coal has also hindered the growth of manufacturing in Greece. The only industries of any importance are those which use raw materials produced in the country. Among these industries are flour-milling and the making of olive oil, cigarettes, woolen cloth, and woolen carpets. Since manufacturing is so little developed, manufactured goods are among the leading imports of Greece.



Photograph by Ewing Galloway, N. Y.

Figure 254. The busy harbor of Piræus. Because of its importance as a port, Piræus has yards where ships are built and repaired, and engineering plants where ships' engines are manufactured.

Athens (Athenai) and its seaport. On the map on pages 226–227 find Athens, the capital and largest city of Greece, and its seaport of Piræus (*H3*). Today, as in ancient times, Piræus is the chief port of Greece and the gateway to Athens, the city which was once the greatest center of art and learning in the world. Thousands of tourists from all parts of the world pass through Piræus every year on their way to Athens. *See Figure 254.*

Piræus and Athens are only about five miles apart, and the trip from the port to the capital can be made quickly by railroad or automobile. Visitors watch eagerly for their first glimpse of the Acropolis, a rocky, flat-topped hill on which are the ruins of some of the most beautiful temples ever built anywhere in the world.

The ancient city of Athens clustered closely round the base of the Acropolis, and here, as on the hill, are the ruins of some very old buildings. Some distance from the Acropolis is the stadium where the Greeks of long ago held their athletic games and matches. The stadium has been rebuilt, and every few years athletes from many different countries gather there to take part in contests which are known as the Olympic Games. *See Figure 255.*

Surrounding the old city is the Neapolis, as the Greeks call the newer part of Athens. Here the streets are wide, and the buildings are much like those in other European capitals. In this part of the city is the National Museum, which is a treasure house of statues and other objects of art made by the Greeks of long ago.

Hundreds of students from western Europe and America go to Athens to spend a year or two studying the art and architecture of the ancient Greeks, or reading Greek plays and

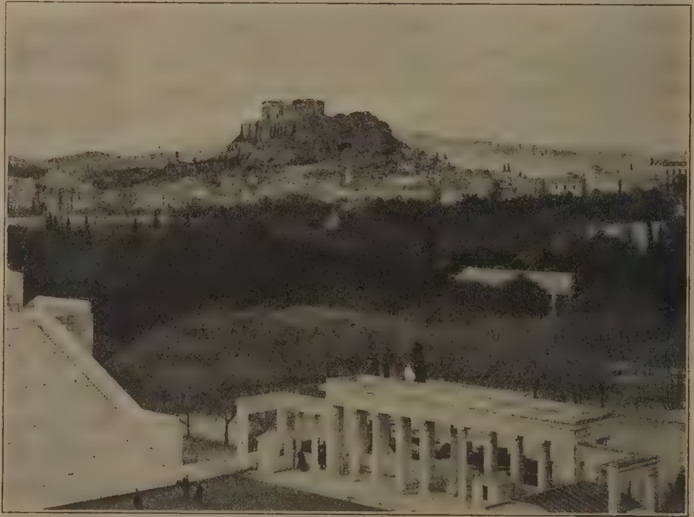


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Figure 255. A view of the Acropolis as it looks from the top of the stadium. The most famous of the ruined temples on the Acropolis is the Parthenon. Have you ever seen a picture of it?

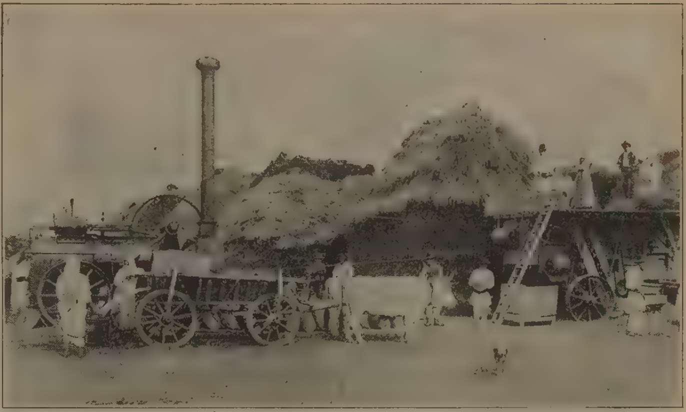
poetry in the surroundings in which they were written, many centuries ago. Salon

Salonika — a gateway city. Turn to the map on pages 144–145 and find the Greek port of Salonika (*K7*). Notice that it is the southern terminus, or end, of a railroad from Berlin and Vienna. This railroad is the chief route of travel and transportation between central Europe and the eastern part of the Mediterranean Sea. Because of this, Salonika is a gateway city, where ships from eastern Mediterranean ports and from Asiatic ports meet trains from central Europe and an exchange of goods takes place. Thus its importance as a port is much greater than if it served only the country in which it is located.

The Greek islands. Crete and the smaller islands which belong to Greece are mountainous, but most of the people are farmers who raise grain and Mediterranean fruits and keep sheep and goats. The islands off the west coast of Greece share the currant industry with the neighboring mainland, and Corfu is noted for the fine quality of its olives.

Sentences to complete. Sum up what you have learned about Greece by completing the following sentences:

1. Sundried fruits are important products of Greece because ____________________________.
2. The leading export of Greece is ________.
3. There are large numbers of sheep and goats in Greece because ____________________.
4. Mining and manufacturing have developed slowly in Greece because __________________ ______________________________________.
5. Thousands of people from all parts of the world visit Athens because _______________.
6. Salonika is an important seaport because ______________________________________.



Photograph by Ewing Galloway, N.Y.

Figure 256. Threshing wheat in Rumania. The plains of Rumania and northern Yugoslavia are the only parts of the Balkan countries where many of the farmers are prosperous enough to have farming machinery. What reason can you suggest for this fact?

3. YUGOSLAVIA AND RUMANIA

The map on pages 226–227 shows that Yugoslavia and Rumania are the largest of the Balkan countries and extend the farthest north. Which of these countries borders the Adriatic Sea? the Black Sea? In which one of them is the mouth of the Danube River?

If we study the foreign trade of these countries, we shall find that they both export corn, wheat, live cattle and pigs, and meat. What explanation for these exports can you discover from the map on pages 226–227? from Figure 223 on page 219? Before you read further, study Figure 256.

Some rich farm lands. The regional map shows that Yugoslavia and Rumania both have a share in the rich Plain of Hungary, and that Rumania has within its borders the greater part of the plain of the lower Danube. Figure 223 (p. 219) shows that these lowland regions are outside the limits of the Mediterranean climate. What did you learn about their rainfall on page 220?

These plains, with their hot, moist summers and their cold winters, will remind you of our own Central Plains, for the farmers grow large quantities of corn and winter wheat and raise

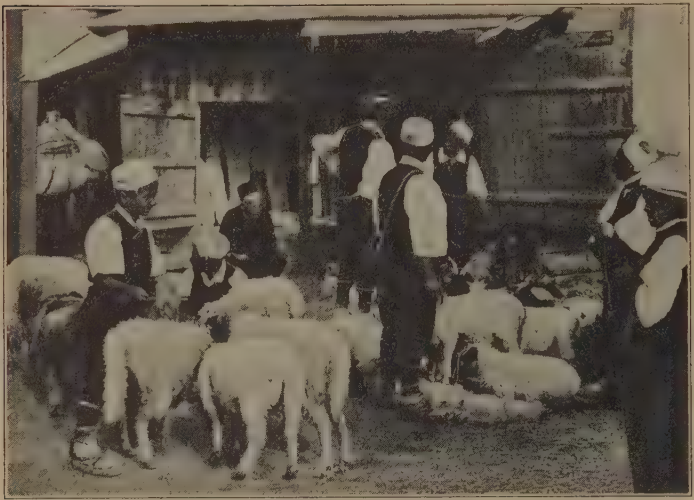


Figure 257. A group of shepherds near Sarajevo, in the part of Yugoslavia known as Bosnia. Notice how they are dressed. Bosnia is one of the mountainous parts of Yugoslavia, where many of the people still follow the customs of their forefathers.

large numbers of cattle and pigs. They also raise other grain crops, and in certain sections tobacco, sugar beets, and grapes and other fruits. Plums are a special crop in northern Yugoslavia, and large quantities of them are sundried to make prunes.

Rumania has other rich farm lands in the Plateau of Transylvania and in the regions east of the Carpathians. Because it has much more land well suited to farming than Yugoslavia has, its exports of grain are greater. The exports of foodstuffs from both countries go chiefly to the densely populated industrial countries farther northwest.

Work among the mountains of Yugoslavia. Among the mountains which make up the greater part of Yugoslavia there are many small but fertile valleys where the people carry on farming. Cattle-raising is not important in these mountainous lands, but large numbers of pigs feed on acorns and beechnuts in the forests, and sheep and goats graze on the rougher and poorer lands. *See Figure 257.*

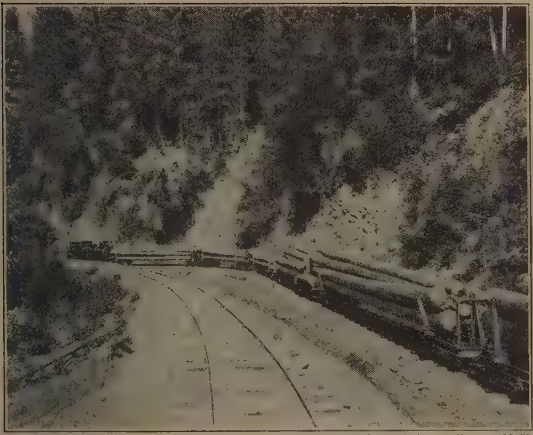
Several of the varieties of trees that grow in the mountainous parts of Yugoslavia provide excellent lumber, and lumbering is carried on in many places. So important is this work that lumber is the most valuable single item among the exports of the country.

Mining in Yugoslavia. Coal and metal ores are found in the mountains of Yugoslavia, but more railroads must be built before mining can be of any great importance. Coal is mined in several places, but not in sufficient quantities to supply the needs of the country. One of the two leading iron-mining districts is north of Sarajevo, and there blast furnaces have been built to smelt the ores. On the map on pages 140–141 find a place in Yugoslavia where copper is mined, and another place where lead is mined.

The coast of Yugoslavia. In studying the map you discovered that Yugoslavia has a long, mountainous coast line on the Adriatic Sea. The coastal region is the only part of the country which has the Mediterranean climate, and, as you would expect, the people raise grapes, olives, and other fruits. Fishing is also important in the coastal towns and villages. From the map on pages 140–141 tell what kind of fish the fishermen catch in largest numbers.

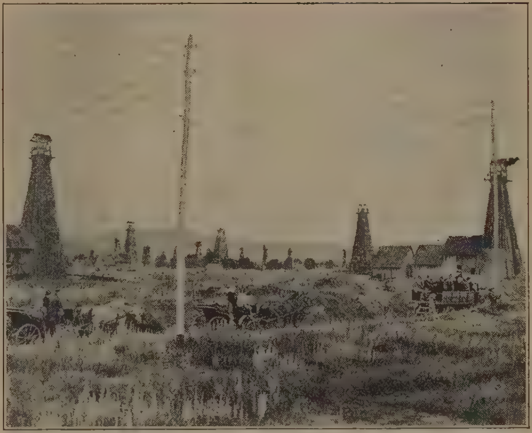
Handicaps to the growth of ports. Although the coast of Yugoslavia has many good harbors, it has no large seaports. The reason for this is that the coast is bordered by long mountain ranges which form an almost unbroken barrier between the interior of the country and the sea. These mountains have hindered railroad building, and at present only three railroads reach the coast. Find them on the map on pages 144–145.

The central and southern railroads wind through the mountains, making transporta-



Photograph from Ewing Galloway, N. Y.

Figure 258. A trainload of logs on their way to a sawmill in the Carpathian Mountains in Rumania. Why are the Carpathian Mountains thickly forested?



Photograph from Ewing Galloway, N. Y.

Figure 259. A view in the oil field north of Ploesti, in Rumania. The petroleum from the wells in this field is pumped through pipe lines to refineries in Ploesti.

tion so slow and expensive that the ports to which they lead are of little importance. The northern railroad leads to the Italian port of Fiume, and is more direct. On land adjoining Fiume the Yugoslavs are developing a port which may in time handle the greater part of their shipping.

At present much of the trade of Yugoslavia by sea passes through the Greek port of Salonika, where the Yugoslavs are allowed to use a certain section of the water front free of charge. Turn to the map on pages 144–145 and show why it is convenient for the Yugoslavs to use this port.

Lumbering in Rumania. The Carpathian Mountains and the Transylvanian Alps in Rumania are covered with forests — chiefly beech trees on the lower slopes, and spruce and pine trees higher up. Lumbering is carried on in many places, and the Rumanians export large quantities of lumber to the countries of western Europe, where the forests have been largely cut down. *See Figure 258.*

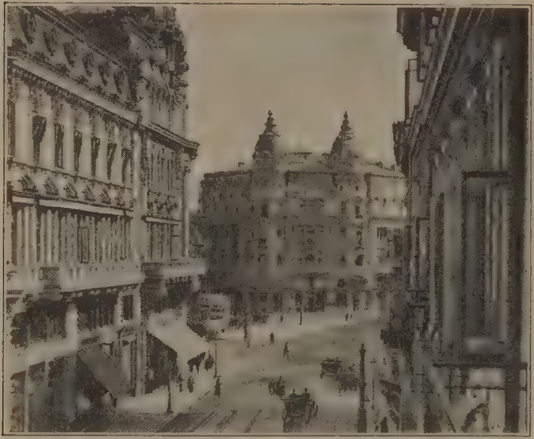
Rumanian oil fields. On the map on pages 226–227 find the oil fields in the mountains of Rumania. Find also the city of Ploesti and the seaport of Constantsa (*J2*).

There are oil refineries in more than a dozen cities and towns near the oil fields, but the greatest refining center is Ploesti. From there the oil goes through a pipe line to Constantsa, on the Black Sea, where it is pumped into tank steamers for export. Mineral oils are among the most valuable exports of Rumania, and they go to many different countries of Europe. *See Figure 259.*

The Danube and the Rumanian seaports. The map on pages 226–227 shows that the Danube has built a great delta at its mouth. Notice that it has three main distributaries. The middle one has been deepened so that good-sized ocean ships can go upstream to the Rumanian ports of Galati and Braila.

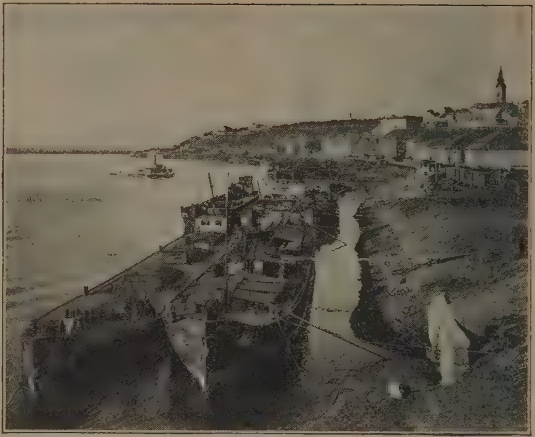
You will remember that the Danube has been internationalized, and that all the countries through which it flows may use it freely. Therefore Galati and Braila export not only Rumanian grain and lumber, but some of the products of Yugoslavia, Bulgaria, and the landlocked countries of central Europe.

During the winter, navigation on the Danube stops on account of the ice, and the harbors of Galati and Braila are usually frozen over. Constantsa, farther south, is ice-free in



Photograph by Ewing Galloway, N.Y.

Figure 260. Part of the business section of Bucharest. Bucharest owes its growth and prosperity to its location in the rich plain of southern Rumania.



Photograph by Ewing Galloway, N.Y.

Figure 261. A glimpse of the water front at Belgrade, where the Sava River joins the Danube. How do you think Belgrade benefits by this location?

winter, and for that reason the Rumanians have made it their petroleum port, with large storage tanks for oil and a special basin for oil tankers. Some of the Rumanian exports of grain also pass through Constantsa.

Two capital cities. On the map on pages 226–227 find Belgrade (Beograd), the capital of Yugoslavia (*H2*), and Bucharest (Bucuresti), the capital of Rumania (*J2*). Which one is on the Danube?

Of the two capital cities, Bucharest is the larger and the more modern. It is the home of most of the wealthy people of Rumania, and the better part of the city has many fine public buildings and beautiful homes. Both cities are important business centers and carry on manufacturing to some extent. Both have flour mills, and Bucharest has oil refineries. *See Figures 260 and 261.*

Belgrade owes much of its importance to its location on the Danube at the point where the railroad from Berlin and Vienna crosses that river. Find Belgrade on the map on pages 144–145 (*K7*) and trace the railroad southward from there. Notice that at Nish the railroad divides, one branch running to Salonika and the other to Constantinople.

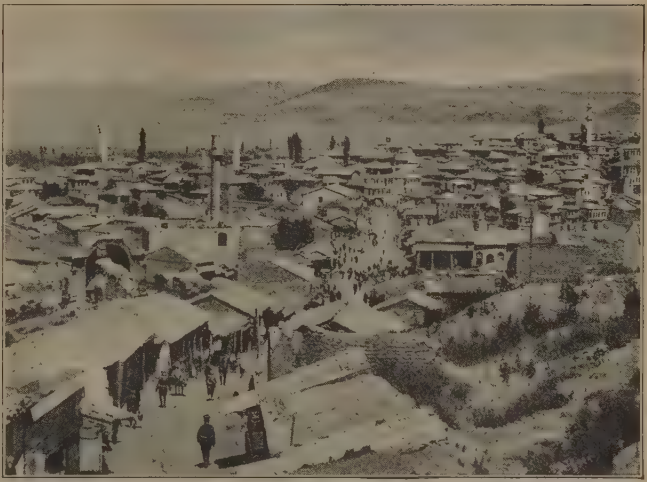
The railroad which runs from Belgrade to Constantinople is the great route of travel and transportation by land between central Europe and southwestern Asia. The fact that a railroad of great commercial importance runs through the Balkan Peninsula is the principal reason why many of the other European countries are deeply interested in the Balkan countries.

Trade and manufacturing in Rumania and Yugoslavia. Both Rumania and Yugoslavia are chiefly agricultural countries, and four fifths of the people are farmers. Farm products, as you know, are among their leading exports. Manufactured goods, especially textiles, iron and steel goods, and machinery, are the leading imports of both countries, showing that neither one has become an important manufacturing country.

At present the only manufacturing industry of importance in either country which depends on imported raw materials is the making of cotton goods for home use, and even this is small. The leading industries are chiefly those which depend on the use of raw materials produced at home, and among them flour-milling is the most important.

Sentences to complete. Complete each of the following sentences by giving reasons:

1. Yugoslavia and Rumania are much more important farming countries than Greece because ------------------.
2. Rumania's exports of grain are greater than those of Yugoslavia because more land suited to farming.
3. Both Yugoslavia and Rumania export lumber because --------------.
4. Large numbers of pigs, sheep, and goats are raised in the mountains of Yugoslavia because ---------------.
5. The mineral resources of Yugoslavia are poorly developed because ---------------------------------.
6. There are no large seaports on the coast of Yugoslavia because ---------.
7. Constantsa is an important oil-exporting port because ---------------------.
8. The Rumanian ports of Galati and Braila are of interest to several other countries besides Rumania because -------------------------.
9. Manufactured goods are the leading imports of Rumania and Yugoslavia because ----------.



Photograph by Ewing Galloway, N. Y.

Figure 262. Angora, the capital of Turkey. Find Angora on the map on pages 226–227 (*K 3*). What reason can you give for the fact that it is much smaller than Constantinople?

4. BULGARIA AND TURKEY

The map on pages 6–7 shows that the bridge between Europe and southwestern Asia is narrowest in the southeast, between the Ægean Sea and the Black Sea. In this part of the Balkan Peninsula are Bulgaria and the European part of Turkey. Although only a very small part of Turkey is in Europe, that part is of great interest to the other European countries. What reasons does the map on pages 144–145 suggest for this fact?

Farming in Bulgaria and European Turkey. The map shows that in the north Bulgaria shares part of the plain of the lower Danube with Rumania. Here are Bulgaria's corn, wheat, and cattle lands, which provide some of the leading exports of the country. This plain has two outlets to the Black Sea — one by way of the Danube, and the other by way of the Bulgarian port of Varna.

Bordering the plain on the south are the Balkan Mountains, where farming is limited to the valleys, and the rougher lands are used to pasture sheep and goats. In the western part of the mountains is Sofia (Sofiya), the capital and largest city of Bulgaria, through which runs the railroad from Belgrade to Constantinople.

The Balkan Mountains shut out the cold winter winds from the north, giving the lowlands of southern Bulgaria and European Turkey a warmer climate. Tobacco is one of the leading crops in these lowlands, and is the most important export of Bulgaria. Silkworms also are raised here, and in the foothills of the Balkan Mountains there are gardens where roses are grown for the manufacture of a perfume known as attar of roses.

Constantinople (Istanbul) — a crossroads city. Constantinople is by far the largest city of the Balkan countries, and for many years it was the capital of Turkey. After the World War the capital was changed to Angora, a much smaller city located on the northern margin of the Plateau of Anatolia in Asia Minor. *See Figure 262.*

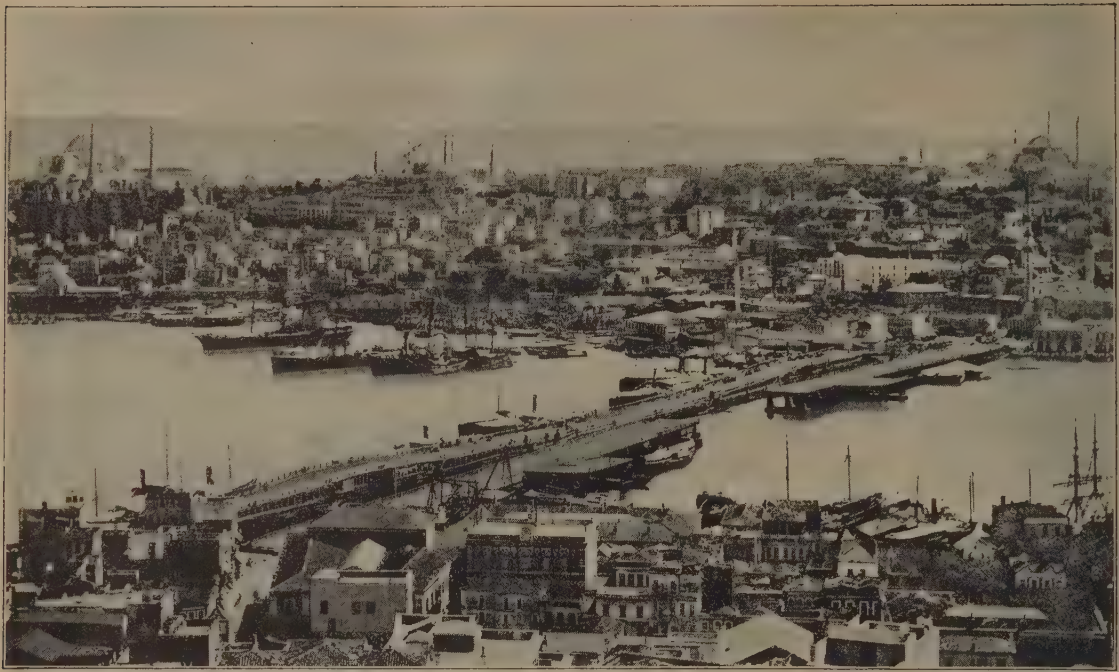


Figure 263. A view of Constantinople, showing part of the Golden Horn, as the harbor is called. Constantinople is a great center of the Mohammedan religion, and the domed buildings with the tall, slender towers which you see in the picture are Mohammedan mosques. Look up the population of Constantinople on page 336.

Study Figure 263 and then find Constantinople on the map on pages 144–145 (*L7*). Notice that it stands at the point where the main highway of overland travel by railroad between Europe and southwestern Asia crosses the narrow waterway connecting the Black Sea with the Mediterranean. The Bosporus causes a break in the overland route, but from Skutari, across the strait from Constantinople, the railroad continues eastward to a town on the boundary between Turkey and Syria. From here the railroad will some day be extended to join the line which runs up the Tigris Valley from Bagdad.

After studying the map, you can understand why Constantinople has long been a large and important city. It has a "crossroads" location at the meeting place of two continents and two seas. The overland trade between Europe and southwestern Asia passes through it, and all the shipping between the Black Sea and the Mediterranean must pass by it.

Although, as people say, "Turkey sits astride the straits," the waterway between the Black Sea and the Mediterranean has been internationalized, and may be used freely by the ships of all nations. This free use of the Dardanelles, the Sea of Marmara, and the Bosporus is of special value to the countries which border the Black Sea.

Where "East meets West." Sailing into the Golden Horn, you will see the slender towers, or minarets, of scores of Mohammedan mosques outlined against the sky, giving the city an Oriental look. It is often said that Constantinople is a city where "East meets West." You will understand what this means after you have visited the old "Turkish quarters" of the city on one side of the harbor and the newer "foreign quarters" on the other.

In the Turkish quarters you will find the streets narrow, winding, and crowded with carriages, heavily loaded donkeys, and swarms of people on foot. Merchants seated in little booths opening on the sidewalks bargain with customers in the Oriental fashion, and craftsmen work at their trades in tiny shops. Wandering about in this part of the city, you might easily believe that you were in some faraway city of Asia, where people live and work in Eastern ways. *See Figure 264.*

Cross the bridge to the foreign quarters, where people from the countries of Europe carry on business, and you will feel that you are in the Western world again. Here trolley cars and automobiles move along well-paved streets, business is carried on in modern stores and office buildings, and work of all kinds is done in Western ways.

Anatolia

The "Mediterranean hem" of Anatolia. The most densely populated part of Anatolia is the "hem" of the peninsula, where the climate is of the Mediterranean type. Most of the people live on little farms where they raise winter wheat and barley and Mediterranean fruits. The most valuable "export" fruits are sundried figs and raisins which are grown in the neighborhood of Smyrna, the chief port of Anatolia.

In several localities tobacco-growing is very important — so important that tobacco is the leading export of Turkey. Turkish tobacco is used in our own country and in many others for making cigarettes.

On the map on pages 226–227 find the places in Anatolia where cotton is an important crop. Cotton-growing is increasing, and a little cotton is exported. The leading cotton-growing district is in the lowland around Adana, and in that city there are cotton gins, cottonseed-oil mills, and a few cotton factories.

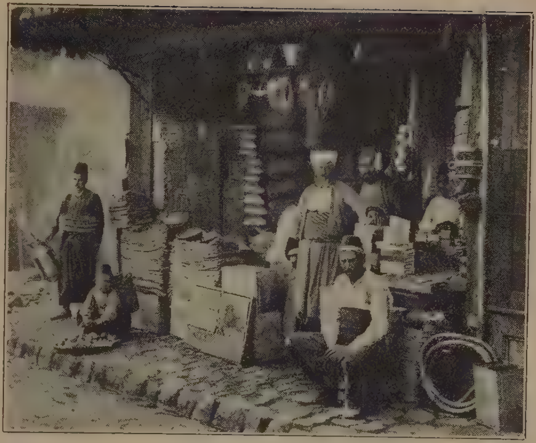


Figure 264. A street scene in the old Turkish quarters of Constantinople. The man at the left is a lemonade peddler, and the little boy is selling fruit.

Grazing lands of the interior. The rainfall of Anatolia grows less and less from the coasts toward the interior, and the central plateau is very dry. For this reason the interior is chiefly a grazing region for sheep and goats, and wool is an export of some importance. Anatolia is the native land of the famous Angora goats, from which mohair is obtained.

The sheep's wool and the mohair produced in this region have led many of the people to engage in the weaving of woolen cloth and the making of carpets and rugs. This work is carried on in the homes and in small workshops in many of the towns and villages. Large quantities of Anatolian rugs are exported to our country, where they are sold as one of the cheaper grades of Oriental rugs.

Mining, manufacturing, and trade. The peninsula of Anatolia is believed to have much mineral wealth, but as yet the Turks have done little to develop it. Manufacturing too is of little importance, and the only industry which provides an important export product is the weaving of carpets and rugs.

Among the exports of Turkey, tobacco, fruits, wool, and rugs are the leaders, and among the imports cotton goods are first.

Matching countries and capitals. Match correctly the countries and capital cities listed below:

Spain 6
Portugal 5
Italy 7
Greece 2
Albania 9
Yugoslavia 3
Rumania 4
Bulgaria 8
Turkey 1

1 Angora
2 Athens
3 Belgrade
4 Bucharest
5 Lisbon
6 Madrid
7 Rome
8 Sofia
9 Tirana

A population test. Below is a table showing the density of population in the countries of southern Europe and Anatolia. Study the table carefully, and then answer the questions following it.

Country	Population per Square Mile
Italy	349
Portugal	175
Rumania	157
Bulgaria	143
Yugoslavia	138
Greece	126
Spain	115
Turkey	46

1. Compare this table with the one on page 215 showing density of population in the central European countries. As a whole, how do the countries of southern Europe compare in density of population with those of central Europe? What reasons can you suggest for the difference?

2. Name the country of southern Europe which has almost as many people per square mile as the most densely populated country of central Europe. What reasons can you give for its dense population?

3. What have you learned about the surface and climate of the various countries of southern Europe and Anatolia which helps to explain why Spain and Turkey stand at the foot of the list in density of population?

4. What reasons can you suggest for the fact that Yugoslavia is somewhat more densely populated than Greece? for the fact that Rumania is somewhat more densely populated than Yugoslavia?

Naming countries. The blank space at the beginning of each sentence below stands for the name of some one of the countries of southern Europe and Anatolia. Give the correct name to begin each sentence, and complete the sentences which need endings.

Of these countries

1. Italy carries on the most foreign trade because ------------------------------.

2. Yugoslavia is the one with the most mineral wealth, yet it is not a great manufacturing country because ------------------------.

3. Italy is the one which makes most use of hydroelectric power because --------------.

4. Rumania is the one which exports the most grain because -----------------------.

5. Rumania is the one which depends most largely on its forest resources.

6. Rumania is the only one which exports petroleum.

7. Greece is the one well known for its exports of tobacco and currants.

8. Yugoslavia is the one which depends most largely on its fisheries.

9. Albania is the least important because --.

10. Anatolia is the one which is largely in Asia Minor.

Some things to explain. Explain why

1. Constantinople is the largest city of the Balkan Peninsula.

2. The countries farther northwest in Europe are interested in the Balkan countries.

3. The fact that the Dardanelles, the Sea of Marmara, and the Bosporus may be used freely by the ships of all nations is a great help to Rumania and Bulgaria.

4. People say that Constantinople is a city "where East meets West."

Addressing letters. Imagine that you have a friend who is traveling in Italy and who has asked you to send him a letter at each of the cities listed below. Give for each city the Italian name which you should use in addressing the letters.

Florence Naples Venice Genoa
Rome Turin Milan

Firenze Venezia Genova
Roma Torino Milano

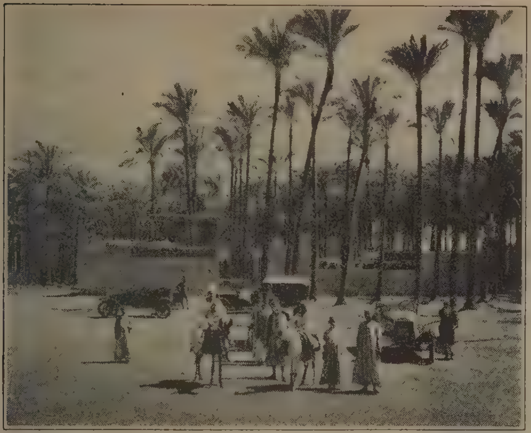


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Figure 265. A picture taken in a village on the Nile. Why are the houses built with flat roofs? What do the palm trees show about the climate of Egypt?

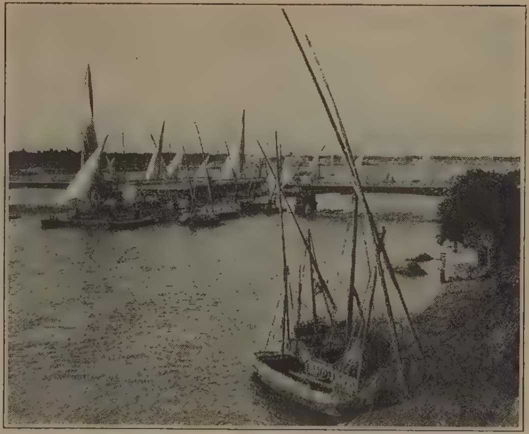

Figure 266. Egyptian sailboats on the Nile at Cairo. Boats of this kind are used to carry goods up and down the Nile between the towns along its banks.

INDEPENDENT COUNTRIES OF AFRICA AND SOUTHWEST ASIA

I. EGYPT — LAND OF THE NILE

Foreword. Study the map of the possessions of the European countries in Africa which you have been making, and see how many political divisions of that continent are still uncolored. If your map is correct, it should show three such divisions,— Egypt, Ethiopia, and Liberia, which are the only independent countries in Africa. Of the three, Egypt is by far the most important. Do you know any reasons for this fact?

People say that "Egypt is the Nile, and the Nile is Egypt." This saying is a true one, for Egypt lies in the Sahara Desert, and without the Nile it would be as useless as the rest of that dry, barren region. But because of the Nile, Egypt has within its borders the most densely populated area in all Africa. Figure 42 (p. 49) shows that this area is a narrow strip of land bordering the river, and that the rest of Egypt is as thinly populated as the other parts of the desert. *See Figures 265 and 266.*

The Egyptians, like the Arabs of Arabia and northern Africa, are people of the white race. The Nile Valley in Egypt has over 1000 people to the square mile, and is more thickly populated than the most crowded industrial districts of western Europe and the United States. What is still more surprising is the fact that most of the people make their living by farming. How do you suppose this is possible in a land where for months at a time not a drop of rain falls?

One of the world's great rivers. The Nile is one of the great rivers of the world. It is longer than any other river except our own Missouri-Mississippi, and about one fourth of its course is in Egypt. On the map on page 48 find Khartum (*G3*), in Anglo-Egyptian Sudan, where the White Nile from the Lake Plateau of East Africa joins the Blue Nile from the Ethiopian Highlands. Trace the Nile northward from Khartum to its mouth, and

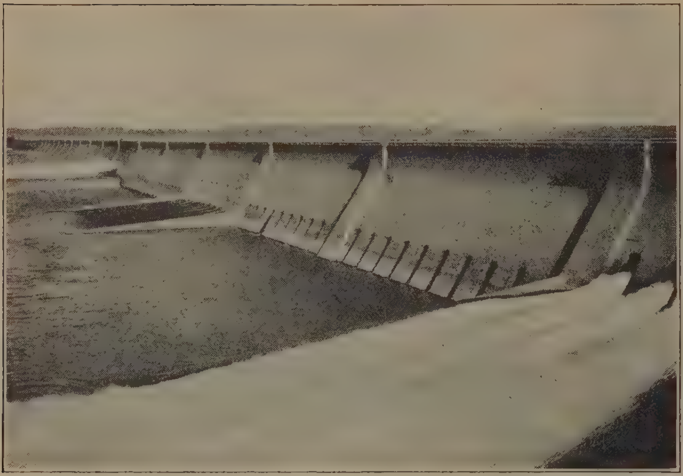

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Figure 267. The Aswan Dam, over a mile long. This great dam holds back part of the water of the Nile. When water is needed downstream, it is let out by opening gates in the lower part of the dam.

notice that there are six *cataracts* in its course. These are places where the river tumbles over rock ledges, forming rapids and falls.

The first cataract, or the one farthest downstream, is at Aswan, in southern Egypt. There the great dam which you see in Figure 267 has been built across the Nile. Can you suggest any reason for the building of this dam?

Picturing the Nile Valley. Figure 268 will help you to picture the Nile Valley in Egypt. Notice the narrow, flat-bottomed trough through which the Nile flows northward to Cairo, and the great delta which begins at Cairo and spreads out in fan shape to the Mediterranean. Use the scale of miles to estimate the width of the valley and the length and width of the delta.

If you should fly in an airplane from Aswan to Cairo, following the course of the Nile, you would see that the valley is a narrow green band of cultivated fields in the midst of the bare, reddish-brown desert. Scattered through it are many little villages of mud-brick houses and a few good-sized towns.

Continuing your flight from Cairo across the delta, you would look down on a broad stretch of very low land divided into thousands of small farms, and crisscrossed by distributaries of the river, canals for irrigation and drainage, and a network of railroads. You would also see that the delta is dotted with towns and villages.

A great oasis. By now you will know that the Nile Valley is a great oasis, where farming is made possible by use of the waters from the river. In fact, it is the greatest oasis in all the world. Here, for thousands of years, the Egyptians have carried on irrigated farming, making an almost rainless region produce large quantities of grain and other crops.

The winters are warm in Egypt, and therefore farming can be carried on the year round. The principal winter crops are wheat, barley, and beans, onions, and other vegetables; and the principal summer crops are cotton, corn, rice, and sugar cane.

Using flood waters for irrigation. From ancient times until less than a hundred years ago the Egyptians depended chiefly on the annual, or yearly, flood of the Nile for water to irrigate their farm lands. Newer methods of irrigation are now used in the delta and the lower part of the Nile Valley, but the "flood method" is still common in the upper part of the valley.

The annual flood comes in September and October and is due to the heavy rains which fall in the Ethiopian Highlands during the summer. Because of these rains, the Blue Nile pours huge quantities of water into the main stream. This causes the Nile to rise and overflow its banks, flooding the bordering lands to a depth of several feet.

In order to hold the flood waters long enough for the soil to be thoroughly soaked, the lands irrigated in this way are divided into basins surrounded by low dikes, and the basins are connected by shallow canals which carry the water from one to another. When the flood waters finally drain off, a thin layer of fertile mud is left on the fields, which enriches the soil. While the land is still wet, the farmers plant their wheat, barley, beans, and other winter crops. These crops grow quickly during the warm winter and are ready to be harvested in February or March.

So long as the flood method was the principal means of irrigation in Egypt, the only places where the farmers could raise summer crops — that is, crops planted in the spring and harvested before the flood season — were the fields immediately bordering the river and its distributaries. For these fields water was lifted from the streams by *shadoofs* and water wheels. These simple methods of irrigation are still used in many places in Egypt even today. *See Figure 269.*

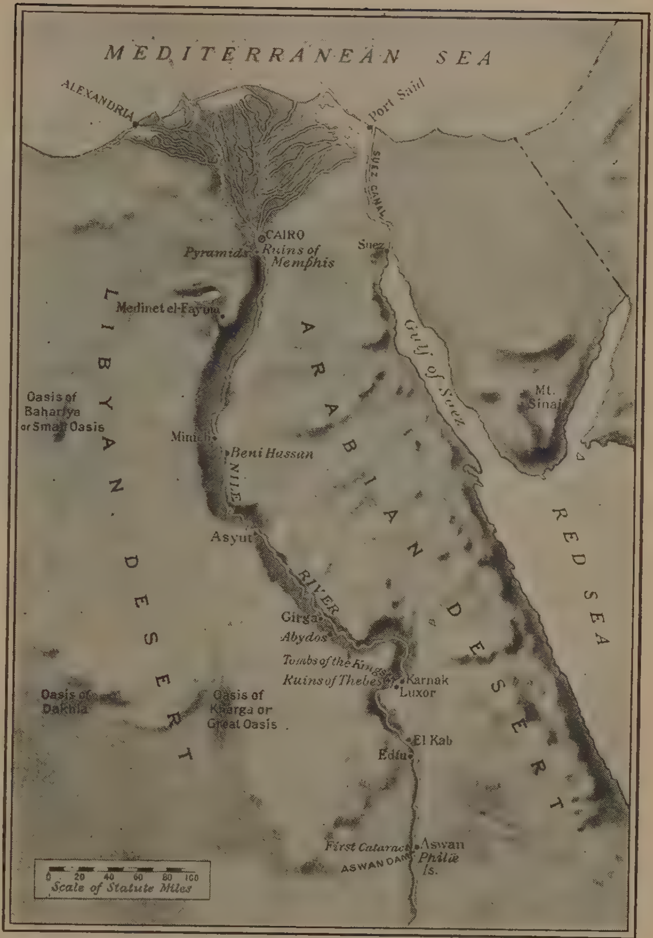
MEDITERRANEAN SEA
ALEXANDRIA
Port Said
SUEZ CANAL
CAIRO
Pyramids
Ruins of Memphis
Suez
Medinet el-Fayum
LIBYAN DESERT
ARABIAN DESERT
Gulf of Suez
Mt. Sinai
Oasis of Baharîya or Small Oasis
Minieh
Beni Hassan
NILE
Asyut
RIVER
RED SEA
Girga
Abydos
Tombs of the Kings
Ruins of Thebes
Karnak
Luxor
Oasis of Dakhla
Oasis of Kharga or Great Oasis
El Kab
Edfu
First Cataract
Aswan
ASWAN DAM
Philæ Is.
0 20 40 60 80 100
Scale of Statute Miles

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Figure 268. A relief map of the valley and delta of the Nile.

Year-round irrigation. Although Egypt is an independent country, the British have long been interested in it because the Suez Canal and the northern section of the Cape to Cairo Railway are in Egyptian territory. In order to make year-round irrigation possible in the Nile Valley, the British have built the great dam at Aswan and several smaller dams at other places along the river.

These dams hold back the waters of the Nile, storing them up for use all through the year. Water for irrigation can be let out whenever it is needed, and canals carry it to the farm lands in the lower valley and the delta. Thus these lands can be irrigated throughout the whole year, and the farmers can raise crops in summer as well as in winter.

Turn to the map on pages 226–227 and name the leading crops grown in the lower valley of the Nile and on the delta. The farms are very small in these crowded lowlands, and most of the farmers do their work in the old-fashioned ways of long ago, but altogether they produce millions of bushels of wheat, corn, and other food crops, and large quantities of cotton.

Although the Egyptian farmers raise foodstuffs in large quantities, the population is so great that nearly all these products are needed for home use, and additional supplies of wheat

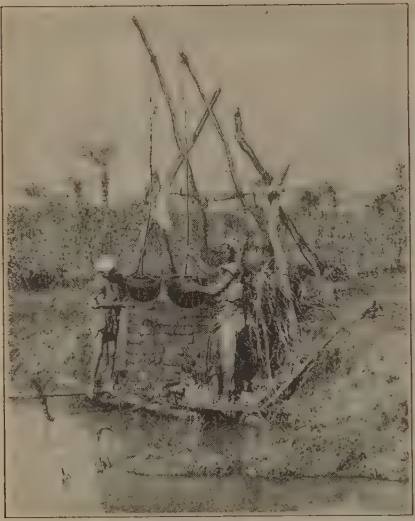

Figure 269. Lifting water for irrigation from the Nile by means of a shadoof. Explain how the shadoof works.

Figure 270. Picking cotton in Egypt. Egyptian children work in the cotton fields with their fathers during the picking season. Where in the United States do we raise the Egyptian variety of cotton?

flour, sugar, and rice have to be imported. Therefore, in spite of being almost entirely an agricultural country, Egypt is not a great exporter of foodstuffs. From the map on pages 226–227 name the one food product which ranks high among the exports. What crop supplies all the other leading exports?

Egyptian cotton. It is clear from the map that cotton is the great export crop of Egypt. The exports of cotton fiber alone are worth more than four times all the other exports combined, and cottonseed and cottonseed cake are also shipped to distant lands.

Egyptian cotton has a long, silky fiber, and because of its fine quality it is in great demand in all the important cotton-manufacturing countries. Nearly all the farmers in the delta and the lower valley of the Nile raise cotton as a money crop. They sow the seed in February or March, pick the cotton in September or October, and send it to towns where it is ginned and baled for export. *See Figure 270.*

Great Britain usually buys more than half of the yearly crop of cotton from Egypt. Can you explain why? Our own country is also a good customer for it, because the amount of "Egyptian" cotton which we raise on irrigated lands in the Southwest is not sufficient to supply our needs.

Alexandria — the seaport of Egypt. On the map on pages 226–227 find Alexandria, the leading seaport of Egypt (*J4*), and notice its location at the western end of the Nile delta. Can you think of any reason why Egypt's chief seaport should have grown up here, rather than at the mouth of one of the distributaries of the Nile?

Study the map more closely, and you will see that the mouths of most of the distributaries of the Nile are almost cut off from the sea by sand bars along the outer margin of the delta. The distributary mouths and the openings between the sand bars are choked with shifting mud and sand washed down by the Nile, and are much too shallow for ocean-going ships. Since these waterways can be used only by small boats, the towns located on them are unimportant as ports.

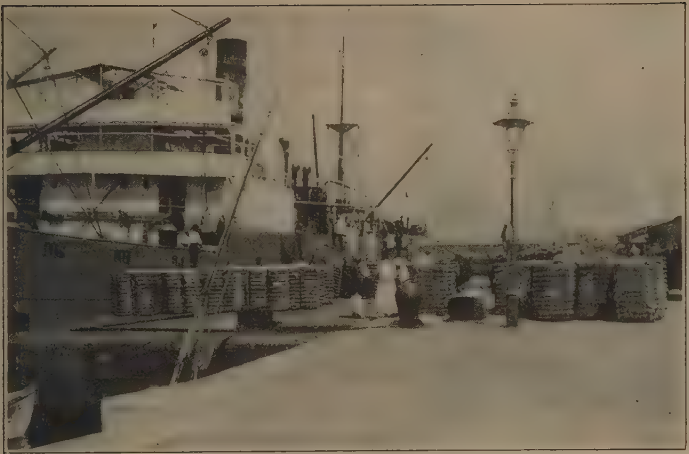

Figure 271. An ocean freighter being loaded with raw cotton at the Egyptian port of Alexandria. If this cotton is bound for England, to what English port is the ship probably going?

Alexandria is located on a sand bar; but since it is beyond the westernmost of the distributaries of the Nile, its harbor is free from shifting sands. It is not a good natural harbor, however, and has to be protected by breakwaters. *See Figure 271.*

Alexandria was founded over two thousand years ago, and today it is the second largest city in Africa. At its busy wharves ships from distant lands load and unload cargoes, and in its cotton exchange the business arrangements are made for selling cotton to manufacturers in England, the United States, and other countries. What do you find among the imports of Alexandria which shows that the Egyptians do not use much of their cotton for manufacturing?

Cairo — the largest city of Africa. On the map on pages 226–227 find Cairo, the capital of Egypt (*K5*). This is the only city in Africa with over a million people. Notice that it is located on the right bank of the Nile, at the head, or inner end, of the delta. Because of its location where the narrow valley of the Nile ends and the delta begins, Cairo is the point where the railroad from Aswan meets the railroads from Alexandria, Port Said, and other parts of the delta. It is chiefly this "crossroads" location in the midst of the richest agricultural region of Africa which has made Cairo the largest city of the continent. *See Figure 272.*

If you visit Cairo in the winter, you will find many visitors from Europe and America there, for the winter weather is delightfully mild. The hotels where the visitors stay, the government buildings, and the better stores are in the "European quarter" of the city, where the streets are well paved and broad enough for automobiles.

Very different are the old "native quarters" of the city, with their hundreds of Mohammedan mosques and their Oriental bazaars full of life and color. There you will find a tangle of streets so narrow and crooked that

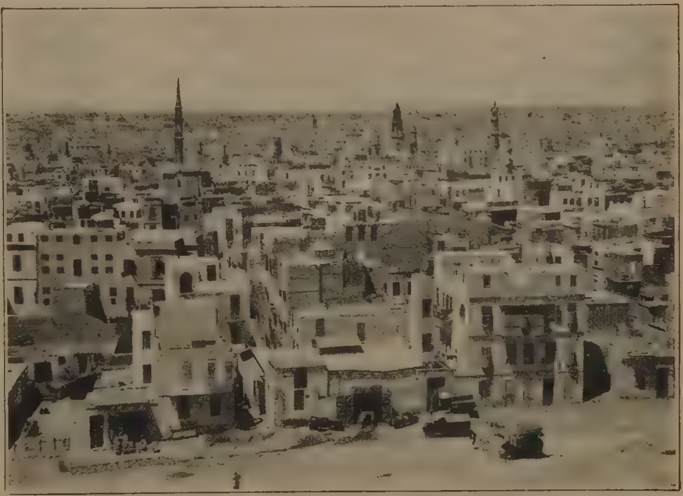

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Figure 272. Part of the city of Cairo. Notice the flat-roofed buildings, and the slender minarets of the Mohammedan mosques. Notice also how level the surface of the Nile delta is.

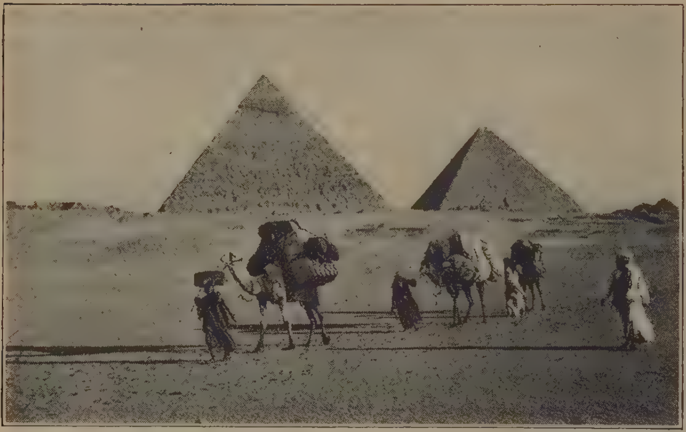

Figure 273. The pyramids near Cairo. These wonderful monuments are built of huge blocks of stone, and are over 5000 years old. Each one was built as a tomb for an Egyptian king and queen.

it is clear they were laid out long before anyone dreamed of automobiles,—streets lined with little shops where workmen carry on their trades and with tiny booths where merchants sell their wares. From daylight until long after dark endless streams of people move through these Old World streets, elbowing their way among carts and heavily loaded donkeys and camels, and stopping now and then to chat with one another or to bargain with the merchants.

While you are in Cairo you will surely visit the National Museum, where the Egyptians have preserved many of the treasures which have been taken from the tombs of the kings and queens of long ago. Among these treasures are paintings, clothing, jewelry, and many objects of daily use which tell of the life and work in Egypt in ancient days. You will also make a trip by automobile, or on camelback if you choose, to the great pyramids which stand on the edge of the desert, five miles beyond the Nile from Cairo. *See Figure 273.*

At Cairo you can take passage on a comfortable steamer and go up the Nile to Luxor, where the tomb of Tutenkhamon, a young king who ruled Egypt more than three thousand years ago, is located. Many of the wonderful things taken from his tomb are in the museum at Cairo.

Mineral resources and manufacturing. Egypt is not a country of great mineral resources, and there are but few places where mining is of any importance. One is in the Sinai Peninsula, where manganese ore is mined; and another is on the desert shore of the Red Sea, where there are phosphate mines. Along the western margin of the Gulf of Suez there are oil wells, from which the crude oil is sent in tank steamers to refineries in Suez. The chief product of these refineries is fuel oil, which is stored at Suez and Port Said to supply ships which need refueling as they go through the Suez Canal.

Since Egypt is so largely an agricultural country and has no coal, manufacturing is of little importance. There are, of course, a few manufacturing plants where Egyptian products are prepared for use, such as the cotton-ginning plants and cottonseed-oil mills in some of the delta towns and the oil refineries at Suez. Except for work of this kind, the only important manufacturing industry is the making of cigarettes. The tobacco comes from Greece and Turkey, and many of the men who make the cigarettes are Greeks.

Egyptian trade. Since nearly all the people of Egypt are farmers, it is not surprising that the leading exports are agricultural products. An interesting fact about Egyptian trade is that the exports consist largely of a single agricultural product. In foreign trade, cotton is more important to Egypt than coffee is to Brazil or nitrate to Chile. Chiefly with its cotton, then, Egypt pays for a variety of imports from distant lands.

Giving reasons. Complete each sentence below by giving reasons for the fact which it states.

1. The fourteen millions of people in Egypt are crowded into an area which makes up less than $\frac{1}{25}$ of the country because ------------------.

2. The prosperity of the Egyptian people depends on the rain which falls farther south in Africa because ---------------------------.

3. Since the British first became interested in Egypt, more and more land in the delta and lower valley of the Nile has been used for growing crops the year round because ---------------.

4. The Nile is not navigable throughout its entire course in Egypt because -------------.

5. The Egyptian farmers build their houses of sun-dried mud bricks instead of wood because --.

6. Although Egypt is almost wholly an agricultural country, it is not a great exporter of foodstuffs because-------------------------.

7. Great Britain has a larger share than any other country in the export trade of Egypt because ----------------------------------.

8. Cairo is the largest city of Egypt because --.

9. The seaport of Alexandria is west of the mouths of the Nile because -----------------.

10. The British hold Port Said and Suez because ------------------------------------.

An import test. Below is a list of some of the leading imports of Egypt. Explain why the Egyptians need each one of them.

cotton goods
wheat flour
coal
fertilizers
lumber
tobacco

A model to make. If you have a sand table or can get some modeling clay, make a good-sized model of the portion of Egypt shown in Figure 268. Show the locations of Cairo, Alexandria, the Aswan Dam, and the ports at either end of the Suez Canal. Perhaps you can think of ways to show some of the chief crops of Egypt, the pyramids near Cairo, a ship passing through the Suez Canal, and some boats on the Nile.

Special credit work. Try to find a book which tells about the Egyptian pyramids, or the temples at Karnak, or the discoveries in the tomb of Tutenkhamon. Report to your class on one of these subjects.

II. ETHIOPIA AND LIBERIA

Foreword. On the map on page 50 find the independent countries of Ethiopia[1] and Liberia. Which one is a mountainous country without any seacoast? Which one is on the west coast of tropical Africa? Which one do you think is probably more densely populated? Check your answer to this question by Figure 42 on page 49.

The people of Liberia are negroes. Those of Ethiopia are people of mixed race, and their ancestors are believed to have come to Africa long ago from the southwestern part of Asia. Have you any idea how Ethiopia and Liberia happen to be independent countries, surrounded, as they are, by possessions of European countries?

Ethiopia

Mountains and independence. The map shows that Ethiopia is a plateau and mountain country. The mountains in the western part are high and rugged, and the plateau is crossed by rivers which have carved deep canyons. The rough surface has hindered the development of the country; but in the days when Europeans were gaining possession of one part of Africa after another, it helped the Ethiopians to keep them out and to preserve the independence of the country.

Three "work zones." Like Mexico, Ethiopia may be divided into three zones, or belts, according to the elevation of the land above sea level. Work in each zone differs somewhat from work in the others because of differences in climate.

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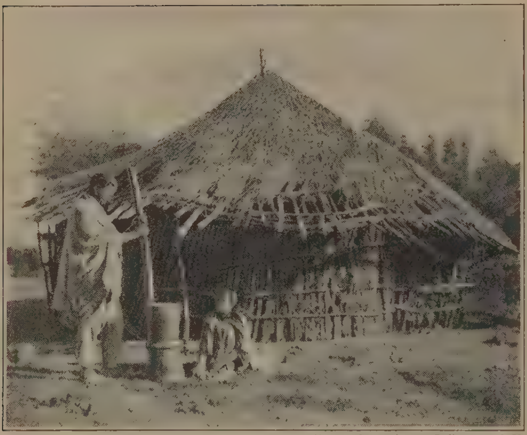
[1] For many years the official name of this country was Abyssinia, but the people have recently changed it to the ancient name of Ethiopia.



Salisbury from Ewing Galloway, N. Y.

Figure 274. An Ethiopian farmer pounding grain in a hollow log to make flour. His house is built of sticks of wood, and the roof is thatched with straw.

The lowest zone includes the lands that are not over 5000 feet above sea level. Because Ethiopia is so near the equator, the climate in this zone is hot the year round, and the people raise tropical and subtropical crops. Chief among them is coffee, which is one of the few exports of Ethiopia. In certain parts of this zone wild elephants are numerous, and the people hunt and kill them, chiefly to obtain the ivory tusks for export.

The second zone is the land between 5000 and 8000 feet, where, because of greater elevation, the climate is mild, but not hot, the year round. This is the zone where most of the people live and where Addis Ababa, the capital and largest town of Ethiopia, is located. The principal crops of the zone are temperate cereal grains and fruits, but the work of greatest importance is cattle-raising. *See Figure 274.*

The third and highest zone is the land over 8000 feet, where the climate is still cooler. Little farming is carried on in this zone, and most of the people get their living by keeping sheep and goats. Hides and skins from the middle zone and the highest zone are the leading exports of Ethiopia.

Handicaps to development. The roads in Ethiopia are little better than trails, and transportation is carried on almost entirely by pack horses, mules, donkeys, and camels. One narrow-gauge railroad connects Addis Ababa with Jibuti, the port of French Somaliland on the Red Sea, but the trains run only twice a week in each direction. Poor transportation has so hindered the development of Ethiopia that the mineral resources are almost untouched, farming is much less important than it might be, and the foreign trade is small.

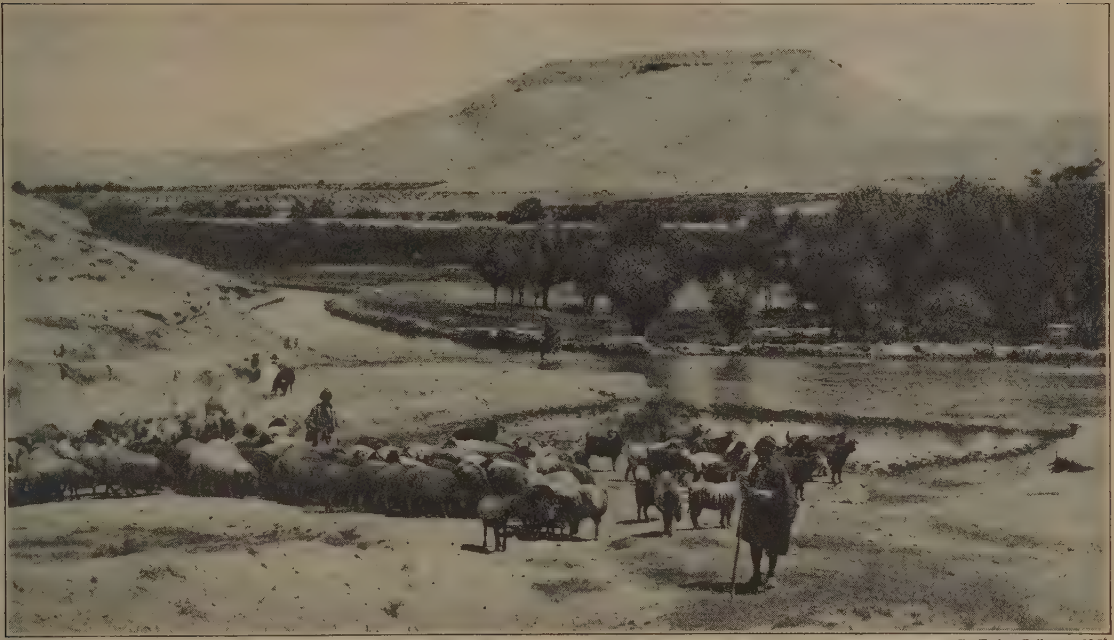
LIBERIA

A negro republic. Liberia was founded over a hundred years ago as a homeland for freed slaves from the United States, and ever since that time it has been an independent negro republic. Some of its people are descendants of the freed slaves, and the rest are African negroes. The capital city, Monrovia, was named for President Monroe of the United States, who helped to establish the republic.

As you would expect from its location on the west coast of tropical Africa, Liberia has a hot, rainy climate. The people grow their own foodstuffs in small gardens, and for export products they raise a little coffee and cacao and gather palm kernels and rubber in the forests. In recent years an American rubber company has established large rubber plantations in Liberia, which provide work for several thousand people. At present, palm kernels and palm oil are the leading exports, but in time rubber may be more important.

Can you explain these facts? 1. Monrovia, the capital of Liberia, and Addis Ababa, the capital of Ethiopia, are both between the equator and the parallel of 10° north latitude. Monrovia is hot the year round, while Addis Ababa is seldom uncomfortably warm. What reason can you give for these differences in temperature?

2. Liberia is much more densely populated than Ethiopia. How do you explain this?



By Ewing Galloway, N.Y.

Figure 275. A view near the mountainous margin of the Plateau of Iran in northwestern Persia. The parts of the plateau which cannot be irrigated can be used only for pasturing sheep and goats. Where there are streams for irrigation, the people raise crops of grain and vegetables, and many different kinds of fruits.

III. ARABIA, PERSIA, AND AFGHANISTAN

Foreword. On the map on page 70 find the Plateau of Arabia, the Plateau of Iran, and the Hindu Kush Mountains. What does Figure 64 show about the rainfall in these regions of southwest Asia? Do you expect them to be thickly populated or thinly populated? Check your answer by Figure 65.

The three countries in this part of Asia which are wholly independent of European control are Arabia, Persia, and Afghanistan. Arabia is made up of several more or less independent states, but all the smaller states recognize Nejd, the largest one, as their leader. Before you read further, locate Arabia, Persia, and Afghanistan on the map on page 75, and use that map to work out the map studies in the next column. The map work will help you to picture these countries more clearly.

Map studies. 1. What countries under British control border Arabia? Persia? 2. What bodies of water separate southern Persia from Arabia? 3. What kind of land makes up most of Afghanistan? 4. What kind of land borders the Plateau of Iran in Persia? 5. What kind of work seems to be most important in the plateau regions of Arabia, Persia, and Afghanistan?

6. In which of these three countries does farming appear to be most important? 7. How do you explain the production of dates in the dry Plateau of Arabia? 8. What product of Persia do you think is probably most important in world commerce? 9. How do you explain the noticeable lack of railroads in Arabia, Persia, and Afghanistan? 10. Which of these countries has no railroads and no seacoast?

High lands and dry lands. The plateaus of Arabia and Iran are fairly high, rising to elevations of from 3000 to 5000 feet above sea

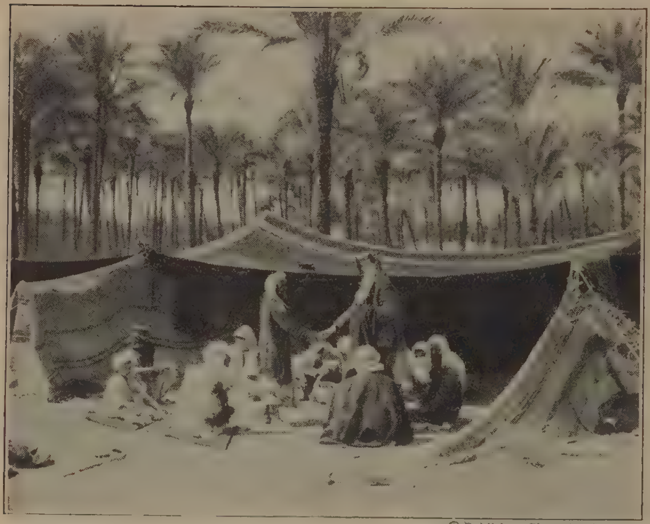


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Figure 276. A Bedouin chief and his family encamped outside an oasis town. What reason can you give for the fact that the only houses the Bedouins have are tents of woolen cloth?

level. The mountains which surround the Plateau of Iran are still higher, and the ranges of the Hindu Kush are some of the highest and most rugged mountains in the world.

You have already discovered that these regions of southwestern Asia have very little rain. They are so dry that large stretches of Arabia are desert lands, and many parts of the Plateau of Iran have but the scantiest covering of poor grass. The mountains have a little more rainfall than the plateaus, and in Persia and Afghanistan snow falls on the higher mountain slopes in the winter. This is a help to the people, for the melting snow drains off in streams which provide water for irrigation on the lower lands in the spring and summer. *See Figure 275.*

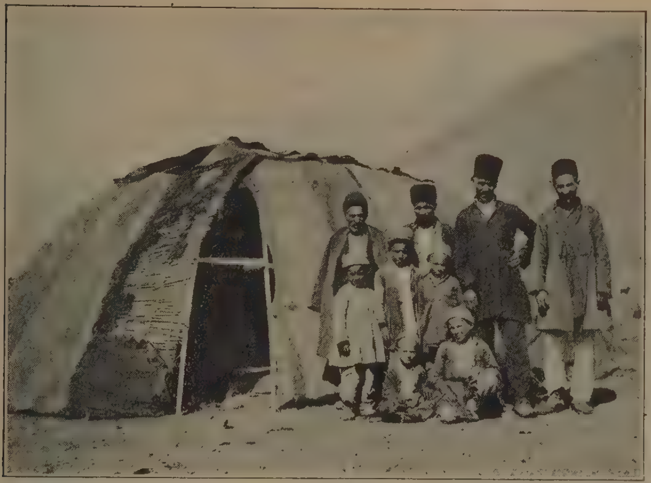
If these regions were lowlands, they would be warm the year round, for they extend from the warmer part of the temperate zone into the torrid zone. As it is, the summers are hot everywhere except on the high mountain slopes; but because of the altitude the winters are fairly cold, and at times the temperatures fall below the freezing point.

Nomadic life in the drier regions. In your study of "Home Life in Faraway Lands" you learned about the groups of nomadic Bedouins who wander about in the dry Plateau of Arabia, seeking grass and water for their flocks and herds. They measure their wealth in the number of camels, sheep, goats, and horses which they own, for these animals provide them with most of their food and clothing materials and with their only means of transportation. Now and then the Bedouins stop at one of the oasis towns to exchange some wool, skins, and cheese for small supplies of flour, dates, and coffee, or perhaps a saddle or a few cooking pots. *See Figure 276.*

In the drier parts of Persia and Afghanistan there are other groups of people who wander from place to place with their flocks and herds. All these nomadic people make a very poor living and often suffer great hardships in their wanderings. *See Figure 277.*

Towns and farm lands. The number of nomads in these countries is small compared with the number of people who live in and near the towns. The towns have grown up at places where water for irrigation can be obtained from wells or streams and the people can make a living by farming. These "garden spots" are found along the margins of the deserts, in the oases, and in the valleys among the mountains.

Arabian crops. The oasis towns of Arabia will remind you of those in the Sahara. They are clusters of mud-brick houses surrounded by gardens which are irrigated with water from wells, and the size of each town depends on the amount of water that can be obtained. The people raise fruits, vegetables, and grain, and forage crops for the camels and donkeys which are used to lift water from the wells and to carry burdens.



By Ewing Galloway, N.Y.

Figure 277. Persian nomads in front of their tent. Their clothing and their tent differ somewhat from those of the Bedouin Arabs, but they live in much the same way.

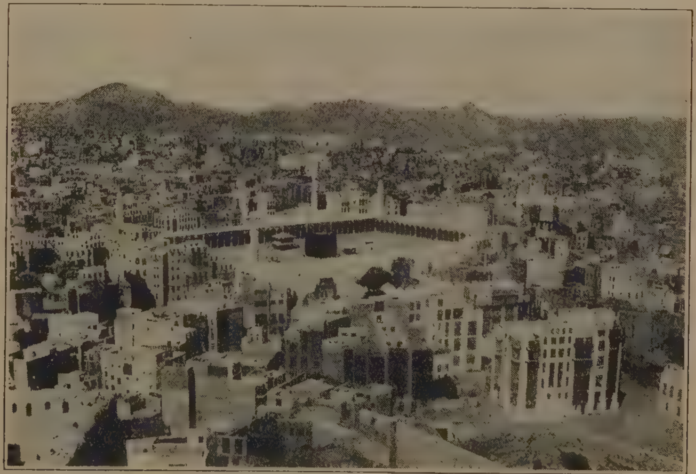
In all these oases there are groves of date palms, for these trees grow better in hot, sunny deserts than anywhere else, provided, of course, that their roots can reach water. The people dry the dates in the sun, pack them in wooden boxes, and send them by camel caravan to the coastal towns for export. Dates are the only export of any importance, for the rest of the agricultural products are used by the people of the oases or are traded with the Bedouins.

The map on page 75 shows that coffee is grown in the Arab state of Yemen on the coast of the Red Sea. There the mountains cause a little more rain to fall, and the fogs from the sea provide additional moisture. Most of the coffee is used in Arabia, for the Arabs are great coffee-drinkers.

Arabian towns. On the map on page 75 find Mecca, the largest town of Arabia, and Medina, farther north (*D6*). Notice that the only railroad of Arabia is the one which connects Medina with Damascus, in Syria. Elsewhere in Arabia travel and transportation are chiefly by camel caravan over routes which connect the oasis towns with one another and with the small seaports. Automobiles are used in a few places.

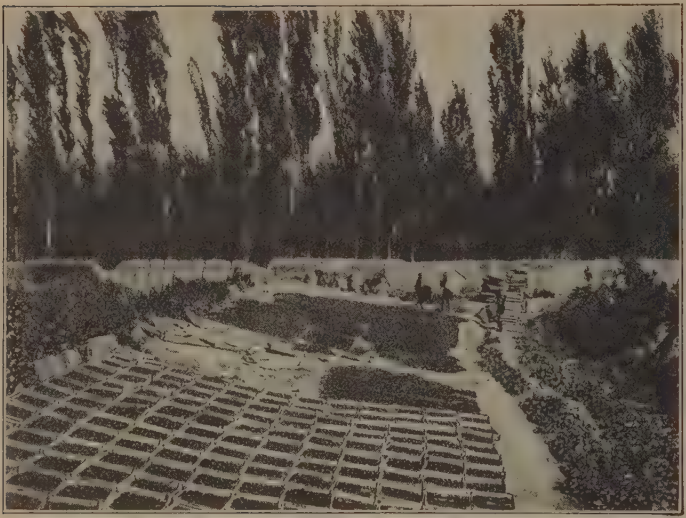
Mecca is the place where Mohammed, the founder of the Mohammedan religion, was born, and Medina is his burial place. Every year thousands of Mohammedans make pilgrimages to these two cities, both of which depend almost wholly on the selling of food and other supplies to the pilgrims. *See Figure 278.*

The "Mediterranean" crops of Persia and Afghanistan. In the mountain valleys of Persia and Afghanistan and on the margins of the Plateau of Iran, crops like those of the Mediterranean lands are raised. The light rainfall of these sections comes in the winter, making it possible for the people to raise winter wheat and barley. The summer crops are irrigated with water from



From Ewing Galloway, N.Y.

Figure 278. Mecca, the sacred city of the Mohammedans. The dark building in the center of the great open court contains a stone which every Mohammedan wishes to touch once in his life.



By Ewing Galloway, N.Y.

Figure 279. A Persian vineyard. The grapes have been gathered and spread out on trays to dry in the sun. Raisins, or sun-dried grapes, have been exported from Persia for centuries.

streams and wells, and among them fruits and nuts are especially important. A great variety of fruits are raised, including grapes, peaches, plums, apricots, melons, and figs of unusually fine quality, and in Persia considerable quantities of some of the fruits are sun-dried for export. *See Figure 279.*

The mulberry trees which are grown in some of the sheltered valleys in northern Persia and in Afghanistan are another reminder of the Mediterranean lands. They are cultivated to provide leaves to feed silkworms, which, in turn, supply the raw material for the weaving of silk goods.

In Persia tobacco and cotton are important summer crops in some of the irrigated districts. The tobacco is grown almost entirely for home use, but small quantities of cotton are exported.

Persian rug-makers. Perhaps you know that the finest of our Oriental rugs come from Persia. In every city, town, and village you will see women and children sitting at looms, patiently tying the knots of colored wool which make the patterns that we admire so much. Rug-making is a very old industry in Persia, for rugs have always been the principal furnishings in Persian homes. Wood is scarce in this dry land, and furniture is costly. Wool is plentiful, and walls can be made beautiful and floors comfortable when covered with soft, finely woven rugs. For many years all the rugs were made in the homes, and for home use; but now that so many are wanted by the people of other countries, workshops have been established where many weavers work together. *See Figure 280.*

Some valuable oil fields. The only important mineral product of the independent countries of southwestern Asia is the petroleum of Persia. In the western part of the country, not far from the boundary of Irak, the British have drilled wells which make Persia one of the chief oil-producing countries of the world. Since the opening of this oil field petroleum has taken first place among the exports of Persia, the place long held by Persian rugs.

Persian cities. Turn to the map on page 75 and find Tabriz and Teheran (*E–F 3*). Which one is the capital of Persia? Which one is the terminus of the only railroad which enters Persia? These and the other Persian cities named on the map owe their growth to the fact that they are trading centers for the best farming sections of the country.

Afghanistan and its capital. Afghanistan is so mountainous that far more of the people are engaged in raising sheep, goats, camels, and other live stock than in farming, and hides and skins, with a little silk, are the chief exports. The country has no railroads and no seacoast. Therefore the people have little to do with the outside world, and their trade with other countries is small.

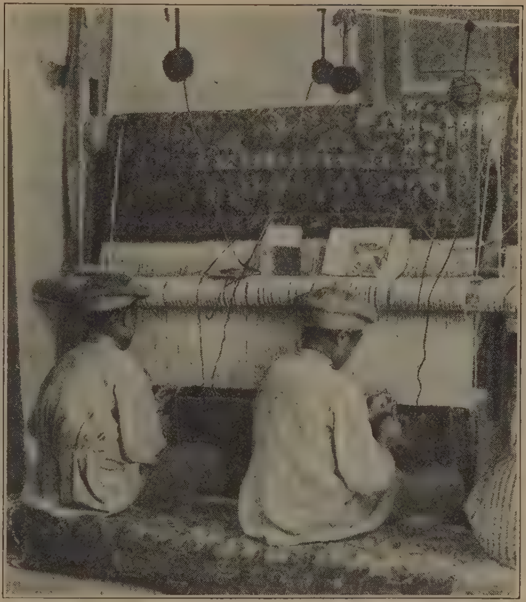
Kabul, the capital, is the only city of any importance. Find it on the map on page 75 (*J 4*) and notice that it is directly west of the Khyber Pass. This narrow pass is the only route across the mountains to India, and the one by which most of Afghanistan's trade is carried on. Kabul, therefore, is the center where goods are collected to be sent out of the country and from which goods that come into the country are distributed.

A city test. Name each city described below and answer the questions about it.

1. The largest city of Africa. Of what country is it the capital? Why does it entertain many visitors from distant lands each year?
2. The chief seaport of Egypt. Why is it an important cotton market? Why is much of its trade with Great Britain?
3. The capital of Liberia. For whom was it named? Why are all the government officials in this town negroes?
4. The capital of Ethiopia. In what zone of the country is it located? What reason can you suggest for its location in that zone?
5. The city where Mohammed was born. In what country is it located? Why does it have thousands of visitors every year?
6. The capital of Persia. In what part of the country is it located? What kind of workshops should you expect to see in this city?
7. The capital of Afghanistan. Why is it the chief commercial center of the country?

Giving reasons. Complete each sentence below by giving reasons.

1. Egypt is by far the most important of the three independent countries of Africa because --.
2. Of all the countries in the world, Great Britain is the one most interested in Egypt because ---------------------------------.
3. People say that "Egypt is the Nile, and the Nile is Egypt" because ----------------.
4. The United States is a good customer for Egyptian cotton because ------------------.
5. Ethiopia has been able to maintain its independence because ----------------------.



By Ewing Galloway, N.Y.

Figure 280. Persian boys weaving a rug. Notice that they are following patterns drawn on paper. It takes many months to make one of these beautiful rugs, for every knot is tied separately by hand.

6. The foreign trade of Ethiopia is small because ----------------------------------.
7. Liberia helps to supply one of the great manufacturing industries in the United States with raw material because ----------------.
8. Some of the people of Arabia and Persia live nomadic lives because ----------------.
9. The size of the towns in Arabia depends largely on the amount of water that can be obtained because ---------------------------.
10. In certain parts of Persia the people raise crops like those of the Mediterranean lands because ---------------------------.
11. The British have a special interest in Persia because ---------------------------.
12. Rug-making has long been an important industry in Persia because ----------------.
13. The people of Afghanistan have little to do with the outside world because -----------.

Special credit work. Find out all you can about Persian and other Oriental rugs — their patterns and how they are woven — and tell your classmates about them.

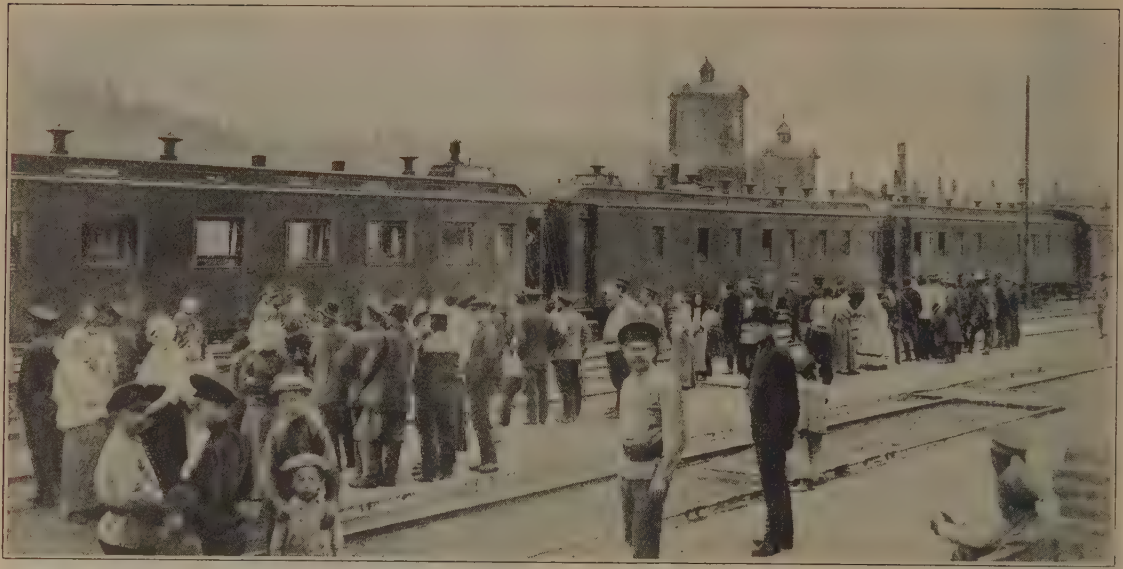


Figure 281. A train on the Trans-Siberian Railroad stopping at a station in the western part of Siberia. This is the only transcontinental railroad across Asia, and the only railroad which connects European Russia with the part of the Soviet Union in the Far East. It was built by the Russians and was completed in 1904.

THE UNION OF SOVIET SOCIALIST REPUBLICS

I. THE LARGEST COUNTRY IN THE WORLD

Foreword. The Union of Soviet Socialist Republics is often called Russia, for it includes most of the land which belonged to the Empire of Russia before the World War. In 1917 there was a revolution in Russia. The emperor, who was called the Czar, was forced to give up his throne, and a committee of the people took charge of the government.

Since the revolution the country has been completely reorganized, and is now made up of several republics, the largest of which is the Russian Soviet Republic. The word *soviet* means a council of delegates of workers. Each village, town, and city, each province of each republic, and each republic itself is governed by a soviet. All the republics are parts of the Soviet Union, and they all send representatives to the All-Union Congress which meets at Moscow, the capital city.

Map Studies. Before you read further, use the two maps on page 276 to work out the following map studies:

1. What can you say about the size of the Soviet Union? 2. Is it a European country or a Eurasian country? 3. What bodies of water does it border? 4. What kind of land makes up most of the western half of the country? 5. What part of the country is best supplied with railroads? 6. What use do you think the people make of many of the rivers?

Now turn to page 71 and locate the Soviet Union on Figure 65. What part of the country is most densely populated? What reason does the rainfall map suggest for the fact that the European part is so much more densely populated than most of the Asiatic part? Compare the population map with the lower map on page 276 and see if you can discover any relationship between the distribution of population and the railroads.

First Glimpses of the Soviet Union

A giant country. You have discovered from the maps that the Union of Soviet Socialist Republics stretches from east-central Europe all the way across Asia to the Pacific Ocean. This is the largest country in all the world. The European part is usually called European Russia, and it is nearly as large as all the other European countries combined. The Asiatic part of the Union is nearly four times as large as the European part, and the country as a whole is over two and a half times the size of the United States without Alaska.

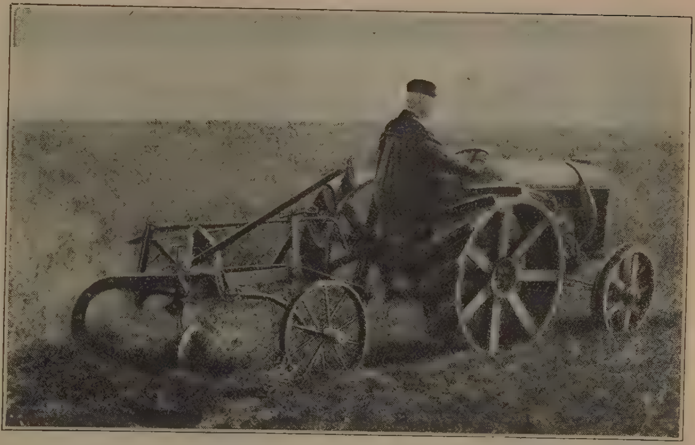


Figure 282. A Russian farmer plowing land in the southern part of the Siberian Plains. Why is farming easy in such a region? The tractor that the farmer is using was made in the United States.

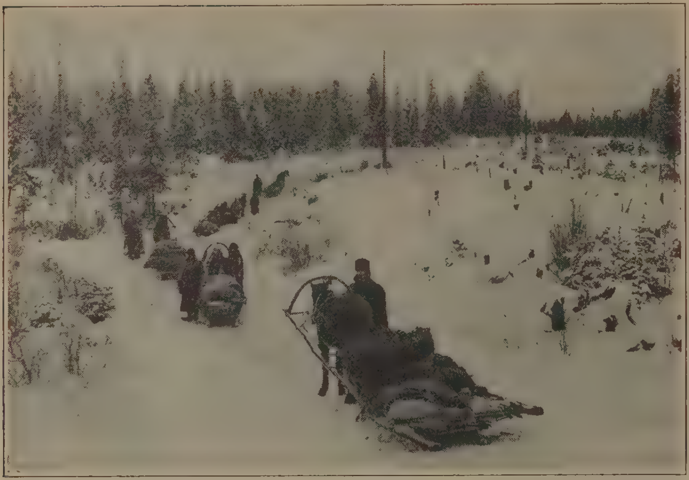
On the lower map on page 276 trace the railroad route from Leningrad (*C3*) to Vladivostok (*N4*). The Asiatic part of this railroad is called the Trans-Siberian Railroad because it crosses the vast stretch of Asia known as Siberia. The distance by train from Leningrad to Vladivostok is about 5500 miles, or nearly twice the distance by train across our country from New York to San Francisco. Study Figure 281, and then use the maps on page 276 to describe the various regions which you would cross on the railroad trip from Leningrad to Vladivostok. The names of the regions are on the upper map.

The plains of the Soviet Union. You have discovered that the western half of the Soviet Union is made up largely of lowland plains. Turn to page 276 again and name the three divisions of these plains. Notice that they extend from the Arctic Ocean to the Black and Caspian seas in Europe, and to the high mountains in central Asia.

Great stretches of these vast plains are less than 500 feet above sea level, and there are but few places more than 1000 feet above the sea. Figure 12 (p. 18) shows that the great continental ice sheet of long ago spread over the northern and western parts of European Russia. There, as in northern Germany and Poland, the plain is covered with glacial drift, and the surface is rolling or hilly, with many lakes, ponds, and marshes. Elsewhere the plains of the Soviet Union are more nearly level, and in places they are very flat. *See Figure 282.*

A sunken sea. What does the map on page 277 show about the level of the Caspian Sea? What does it show about the elevation of much of the land bordering that sea? The Caspian Sea and Lake Aral, farther east, have no outlets. Because of this, they are much saltier than the Black Sea, for all the salts which the rivers bring to them are left behind as the water evaporates from their surfaces. What great lake in the United States has become very salty because it has no outlet?

Higher and rougher lands. On the upper map on page 276 find the mountainous regions of the Soviet Union. Notice that the Ural Mountains and the Caucasus Mountains form parts of the natural boundary between Europe and Asia. The young, rugged Caucasus Mountains are higher than the Alps, and their



"U. S. Official" Photograph

Figure 283. A winter scene in the north-central part of European Russia. For many months the snow lies deep on the ground, and in the places where there are no railroads, sledges and sleighs are the only means of transportation and travel.

summits are covered with ice and snow the year round. The old, worn-down Urals are much lower, and they do not form a serious barrier to travel and transportation between the plains of Europe and the plains of Siberia.

The map shows that the largest stretches of mountains, uplands, and plateaus in the Soviet Union are in the far eastern part of the country. There you will find young mountains and old mountains, and the great stretch of uplands and plateaus known as the East Siberian Uplands. These regions are mostly a forested wilderness, and are thinly populated.

Some differences in temperature. As you would expect in such a huge country, there are great differences in climate within the Soviet Union. The very fact that the country extends from the Arctic Ocean to the parallel of 35° north latitude (the latitude of Memphis, Tennessee) means that there are great differences in temperature and length of growing season from north to south.

Furthermore, Eurasia is such an enormous mass of land that the interior becomes very cold in winter and very warm in summer. The basin of the Lena River in Siberia has the coldest winters of any inhabited part of the world, and it is not uncommon for the temperature to drop to 50° F. or 60° F. below zero there. Yet in the summer this same region often has temperatures well above 70° F.

In the European part of the Soviet Union the extremes of temperature are somewhat less, but even so, the winters are very cold and the summers often very warm. At Moscow, for example, the temperature often drops below zero in winter, and rises above 80° F. in summer. *See Figure 283.*

Some differences in rainfall. Turn to Figure 64 (p. 71) and study the distribution of rainfall in the Soviet Union. What parts of the country have over 20 inches of rain a year? Judging from the rainfall, which one of the three regions of plains do you think is best suited to farming?

The map shows that vast stretches of the Soviet Union have less than 20 inches of rain. The lands which have less than 10 inches are deserts or semi-deserts, where farming can be carried on only by irrigation. Fortunately, many parts of the lands which have between 10 and 20 inches of rainfall receive much of their rain in the spring or early summer. For this reason they are well suited to the growth of spring-sown wheat and other grains, which need moisture during the early part of the growing season and dry weather during the period when they are ripening.

The rivers and their use. On the upper map on page 276 find the following rivers of the Soviet Union: Dnieper (*C4*), Don (*D4*), Volga (*D4*), Dvina (*D2*), Ob (*F–G2*), Yenisei (*H2*), and Lena (*M2*). Name the body of water into which each one flows.

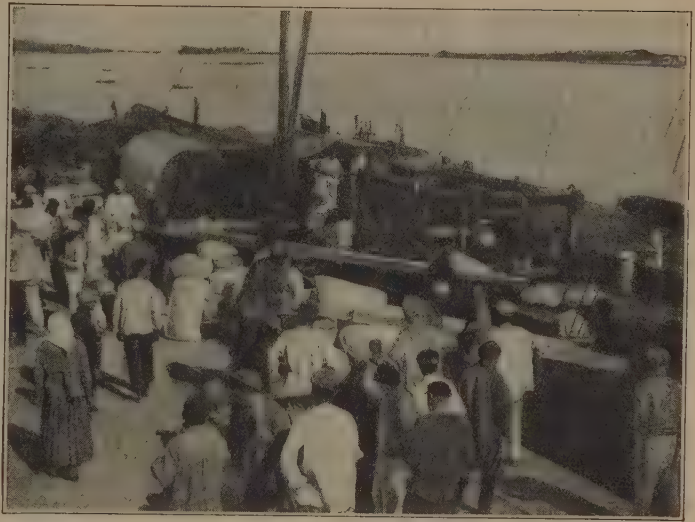


Figure 284. Loading barges on the Don River with bags of grain. After the harvest season in European Russia, much grain is sent in barges down the southward-flowing rivers to ports on the Black Sea for shipment to other countries of Europe.

As in many countries of Europe, so in the Soviet Union, the rivers have long been important routes of travel and transportation. Unfortunately, however, they cannot be used for navigation all the year round, for they are frozen over from three to six or more months every year, according to their location. Another handicap to the use of some of the rivers for commercial navigation is that they flow northward to the Arctic Ocean, which is closed by ice most of the year. *See Figure 284.*

The rivers that are used most for the transportation of goods for export are those which flow southward to the Black Sea. Can you explain why? The Volga, which is the longest river of European Russia, is used extensively for travel and transportation between the cities and towns along its banks, but it is of little importance in the transportation of goods for export. Give a reason for this.

Disadvantages of the coast line. Although the Soviet Union borders the Arctic Ocean, the Pacific Ocean, the Black Sea, and the Baltic Sea, its coast line provides few good outlets to the great ocean trade routes. The thousands of miles of ice-bound Arctic coast are almost useless. Leningrad and Vladivostok are located at the southernmost points on the western and eastern coasts; but, even so, they are so far north that if ice-breakers were not used their harbors would be closed for at least four months during the winter.

The most useful outlet of the Union is the short coast line on the Black Sea, but even there cold winds from central Asia in the winter cause the harbors to freeze over for about two months, and ice-breakers must be used to keep them open.

Some things to do. 1. Use the lists on pages 330–331 to make the following comparisons:

a. Compare European Russia in size with France, the largest of the countries which lie wholly in Europe.

b. Compare the Asiatic part of the Soviet Union in size with the Chinese Republic, the largest of the countries which lie wholly in Asia.

2. Find out the average temperatures for January and July where you live. Compare these temperatures with those in central Siberia.

3. Use the map on page 277 to show how goods may be transported by water from

a. Nizhni Novgorod (*H3*) to Leningrad (*F3*), on the Gulf of Finland.

b. Nizhni Novgorod to Astrakhan (*J5*), on the Caspian Sea.

c. Kiev (*F4*) to Warsaw (*D4*), and the Free City of Danzig (*C4*).

Special credit work. 1. Find out all you can about the building of the Trans-Siberian railroad and report to your class on it.

2. Make some graphs comparing the Union of Soviet Socialist Republics in size and population with the Chinese Republic, Canada, Brazil, and the United States.

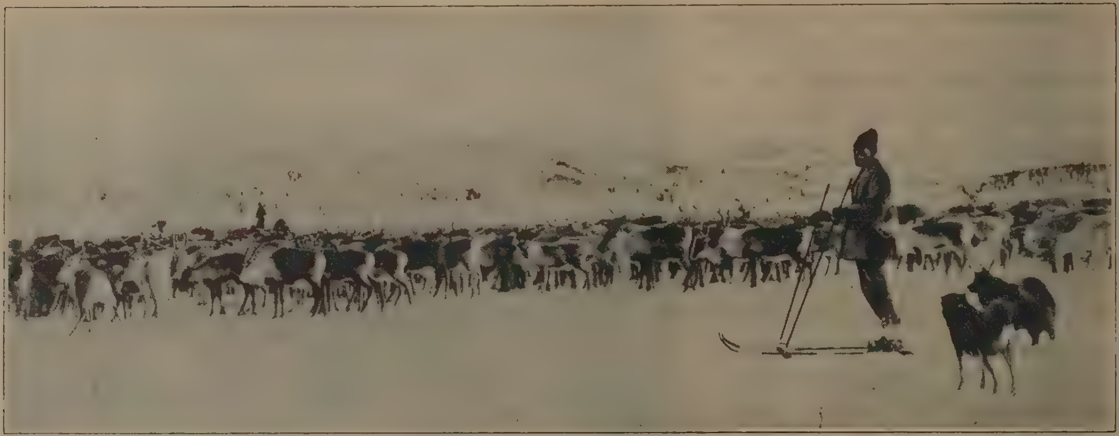


Figure 285. A herd of reindeer in the tundra of northern Europe. The reindeer have sharp hoofs with which they can dig down through the snow and get at the grass buried beneath it. The men who own the herd shown in the picture are Lapps who wander over northern Finland and the adjoining part of Russia.

II. WORK IN THE GREAT BELTS OF THE SOVIET UNION

Foreword. The upper map on page 276 shows that the Soviet Union may be divided into four great vegetation belts. The two northern belts are the tundra and the taiga, which run all the way across this vast country. Farther south is the grassland, which extends only part way across the country. Still farther south is the belt of steppe and desert, which grows drier and drier from north to south.

Make a list of these four belts of the Soviet Union. Then, with the help of the lower map on page 276 and the map on page 277, write opposite the name of each belt the kinds of work that you think are most important there. Keep this list and add to it as you study this chapter.

The Tundra

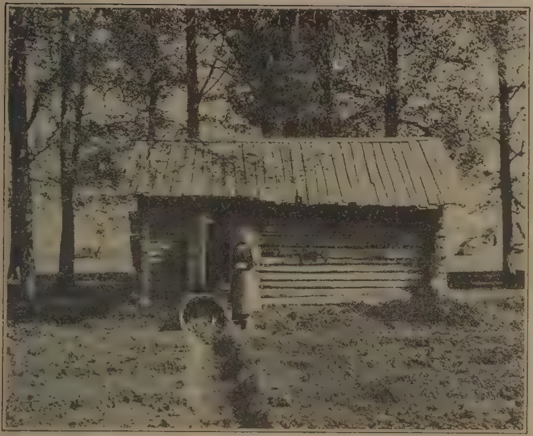
The Far North of Eurasia. When you were studying North America, you learned about the cold, frozen tundra of the Far North. What did you learn about the people of that region of North America and the ways in which they make their living?

Eurasia too has its tundra, and this region forms the northernmost belt of the Soviet Union. The upper map on page 276 shows that the tundra borders the Arctic Ocean all the way from Finland to Bering Strait. How should you describe the surface of the land in most of this region?

There are but two seasons in the tundra: a long, dark winter when the temperatures are far below zero, and a short, warm summer of almost unbroken daylight. After the snow disappears in the spring the ground thaws, but the melting extends less than two feet below the surface.

The tundra is overgrown with mosses, lichens, and many small shrubs which are dwarfed in their growth because the weather is so bitterly cold most of the year. Even full-grown trees are seldom more than two feet high in this cold region, and many are less than a foot in height. During the short summer berries are plentiful, and many bright-colored flowers bloom for a few weeks.

Reindeer-herders. The few people who live in the tundra of the Soviet Union are nomads



From Ewing Galloway, N. Y.

Figure 286. A Russian peasant woman at the door of her house, in the part of the taiga of European Russia where most of the land has been cleared for farming. Of what material is the house built, and why?

who have herds of reindeer. In the western part of European Russia these wandering people are Lapps like those in northern Finland, Sweden, and Norway. In the eastern part of European Russia and in western Siberia are the Samoyedes and Ostyaks, and in the eastern part of the tundra of Siberia are the Yakuts. All these groups of people live chiefly on reindeer milk and meat, though they also catch fish and birds and gather berries. During the summer they follow their bands of reindeer to the shores of the Arctic Ocean. As the cold weather approaches, they move southward to the margin of the forest belt, where they live in little huts of rocks or wood covered with sod during the coldest months of the winter. *See Figure 285.*

The Taiga

One of the greatest forests in the world. Bordering the tundra on the south is the taiga, which is one of the greatest forests in the world. The forests of Scandinavia, Finland, and the Baltic Sea countries form the westernmost part of this belt, and it stretches all the way across the Soviet Union to the Pacific Ocean. The trees in the northern part of the taiga are mostly evergreen softwoods, while those farther south are mixed hardwoods and softwoods.

Lumbering and farming in the taiga of European Russia. The upper map on page 276 shows that the taiga covers half or more of the European part of the Soviet Union. South of the parallel of 60° much of the land has been cleared for farming, but north of that line the climate is so cool that but little farming is carried on.

In the sections where much land has been cleared the farmers raise large quantities of rye, oats, flax, and potatoes. These crops, as you know from your study of the United States and Canada, grow well in cool temperate lands because they do not need a long growing season. Many of the farmers in this part of the Soviet Union keep cattle and various other kinds of live stock, but in the region as a whole the raising of crops, especially grain and flax, is the most important kind of work. *See Figures 286 and 287.*

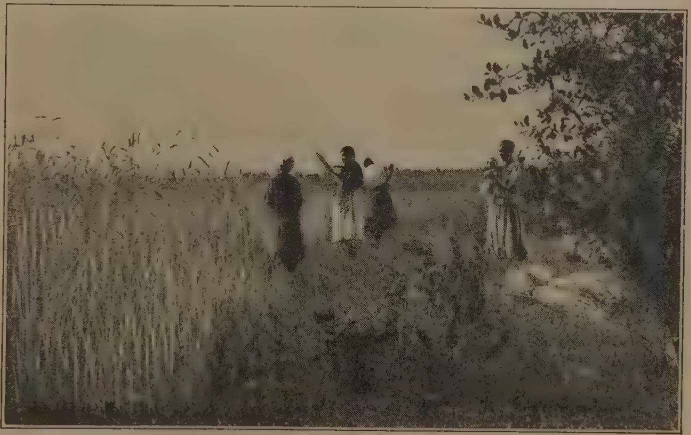
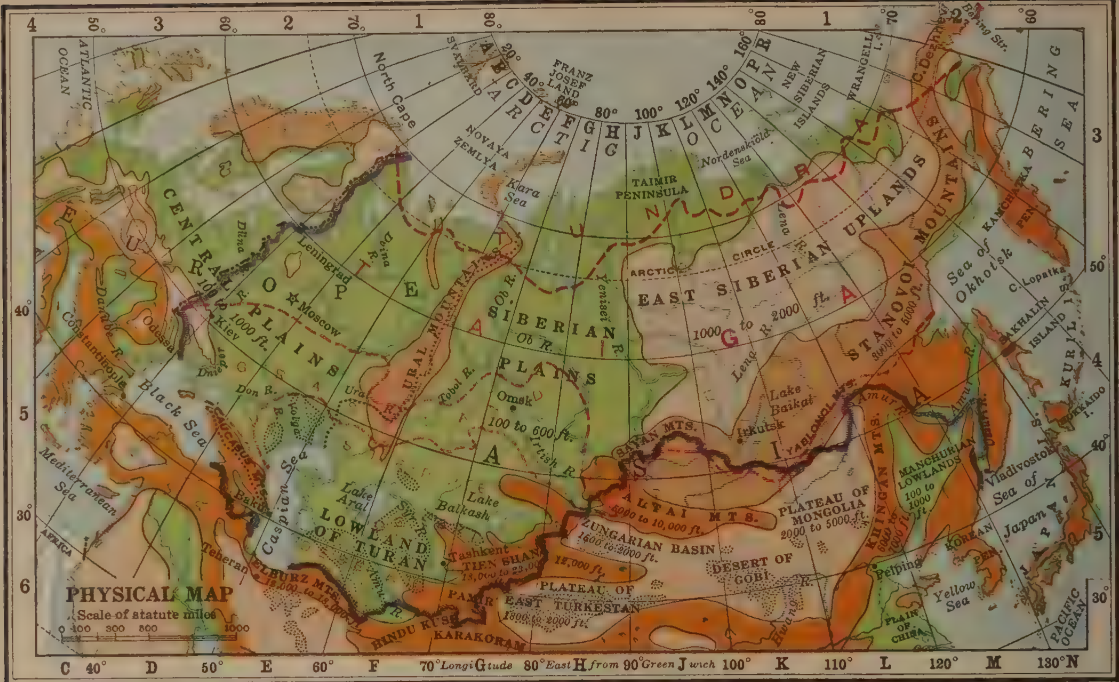


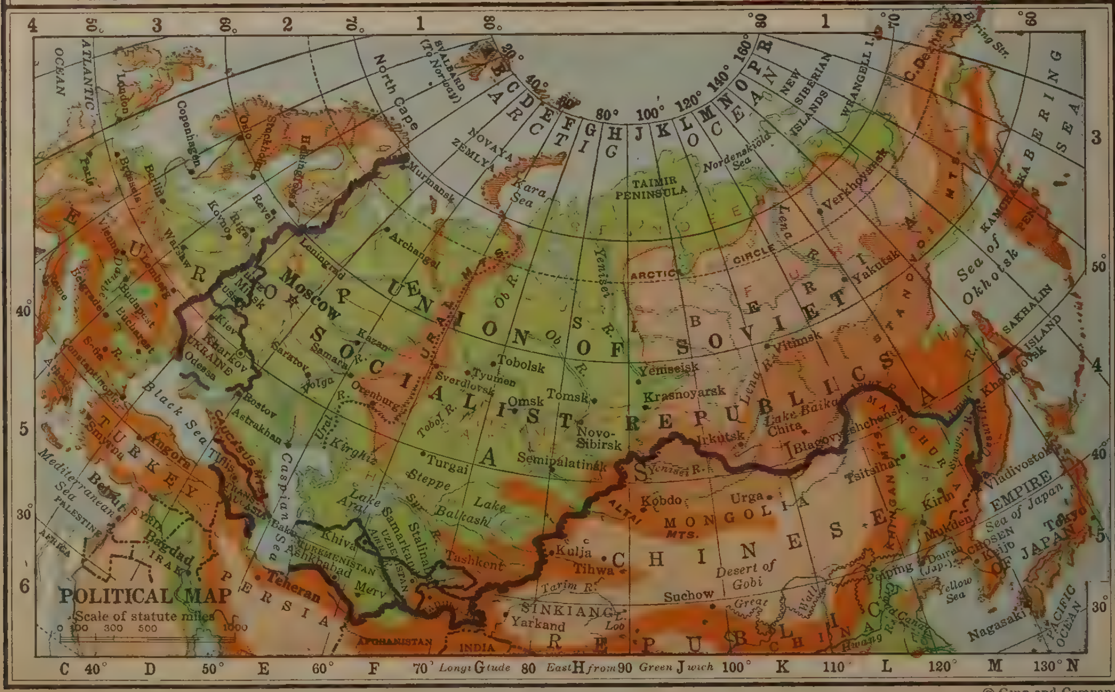
Figure 287. Peasant women harvesting grain on cleared land in the taiga of European Russia. Some of the Russian peasants have farming machinery, but on many farms much of the work is done by hand.


PHYSICAL MAP
Scale of statute miles
0 100 300 500 1000
ATLANTIC OCEAN
ARCTIC OCEAN
SVALBARD
FRANZ JOSEF LAND
NOVAYA ZEMLYA
Kara Sea
Nordenskiöld Sea
NEW SIBERIAN ISLANDS
WRANGELL I.
C. Dezhnev
Bering Str.
BERING SEA
North Cape
TAIMIR PENINSULA
TUNDRA
TAIGA
STEPPE
CENTRAL RIDGE
EUROPE
CENTRAL PLAINS
Leningrad
Moscow
Kiev
Odessa
1000 ft.
Dvina R.
Dnieper
Don R.
Volga R.
Ural R.
URAL MOUNTAINS
Tobol R.
Ob R.
SIBERIAN PLAINS
Omsk
100 to 600 ft.
Irtish R.
Yenisei R.
ARCTIC CIRCLE
EAST SIBERIAN UPLANDS
1000 to 2000 ft.
Lena R.
STANOVOI MOUNTAINS
3000 to 5000 ft.
Sea of Okhotsk
KAMCHATKA PEN.
C. Lopatka
SAKHALIN ISLAND
KURIL IS.
HOKKAIDO I.
Amur R.
Lake Baikal
Irkutsk
SAYAN MTS.
YABLONOI MTS.
ASIA
ALTAI MTS.
6000 to 10,000 ft.
PLATEAU OF MONGOLIA
2000 to 5000 ft.
KHINGAN MTS.
MANCHURIAN LOWLANDS
100 to 1000 ft.
Vladivostok
Sea of Japan
KOREAN PEN.
JAPAN
Yellow Sea
Peiping
PLAIN OF CHINA
Hwang R.
PACIFIC OCEAN
DESERT OF GOBI
ZUNGARIAN BASIN
1600 to 2000 ft.
Lake Balkash
TIEN SHAN
13,000 to 23,000
12,000 ft.
PLATEAU OF EAST TURKESTAN
1800 to 2000 ft.
PAMIR
HINDU KUSH
KARAKORAM
Tashkent
LOWLAND OF TURAN
Lake Aral
Caspian Sea
Baku
Teheran
ELBURZ MTS.
13,000 to 18,000
CAUCASUS MTS.
Black Sea
Constantinople
Danube R.
Mediterranean Sea
AFRICA
Sir R.
Amu R.
C 40° D 50° E 60° F 70° Longitude 80° East from 90° Greenwich 100° K 110° L 120° M 130° N

- ▨ Land below sea level
- 🟩 Lowlands and interior plains
- 🟧 Young, rugged mountains
- ▭ Uplands and plateaus
- ▨ Old, worn-down mountains
- ....Natural boundaries between Europe and Asia

UNION OF SOVIET SOCIALIST REPUBLICS

- ☆ Capital of U.S.S.R.
- ⊙ Capitals of republics of U.S.S.R.
- ● Chief seaports
- ═ Navigable rivers
- — Principal railroads
- – – – Boundaries of vegetation belts of U.S.S.R.


POLITICAL MAP
Scale of statute miles
0 100 300 500 1000
ATLANTIC OCEAN
ARCTIC OCEAN
SVALBARD (To Norway)
NOVAYA ZEMLYA
Kara Sea
Nordenskiöld Sea
NEW SIBERIAN ISLANDS
WRANGELL I.
C. Dezhnev
Bering Str.
BERING SEA
North Cape
TAIMIR PENINSULA
London
Paris
Brussels
Copenhagen
Oslo
Stockholm
Helsingfors
Berlin
Kovno
Riga
Reval
Warsaw
Vienna
Budapest
Belgrade
Bucharest
Rome
Athens
Constantinople
EUROPE
Murmansk
Leningrad
Archangel
Minsk
Moscow
Kiev
Kharkov
UKRAINE
Odessa
Rostov
Astrakhan
Saratov
Samara
Kazan
Volga
Orenburg
UNION OF SOVIET SOCIALIST REPUBLICS
Sverdlovsk
Tyumen
Tobolsk
Omsk
Tomsk
Novo-Sibirsk
Semipalatinsk
Turgai
Kirghiz Steppe
Yeniseisk
Krasnoyarsk
Irkutsk
Vitimsk
Chita
Blagoveshchensk
Yakutsk
Verkhoyansk
ARCTIC CIRCLE
Sea of Okhotsk
KAMCHATKA PEN.
SAKHALIN ISLAND
Khabarovsk
MANCHURIA
Tsitsihar
Kirin
Mukden
Vladivostok
EMPIRE OF JAPAN
Sea of Japan
CHOSEN (Jap.)
Keijo
Tokyo
Nagasaki
Dairen (Jap.)
Peiping
Yellow Sea
PACIFIC OCEAN
MONGOLIA
Urga
Kobdo
ALTAI MTS.
CHINESE REPUBLIC
Desert of Gobi
Great Wall
Suchow
Kulja
Tihwa
Tarim R.
SINKIANG
Yarkand
AFGHANISTAN
INDIA
Tashkent
Samarkand
Stalinabad
UZBEKISTAN
TURKMENISTAN
Khiva
Ashkhabad
Merv
Lake Aral
Lake Balkash
Caspian Sea
Baku
Tiflis
CAUCASUS MTS.
Black Sea
TURKEY
Angora
Smyrna
SYRIA
Beirut
PALESTINE
Bagdad
IRAK
PERSIA
Teheran
Mediterranean Sea
AFRICA
C 40° D 50° E 60° F 70° Longitude 80 East from 90 Greenwich 100° K 110° L 120° M 130° N

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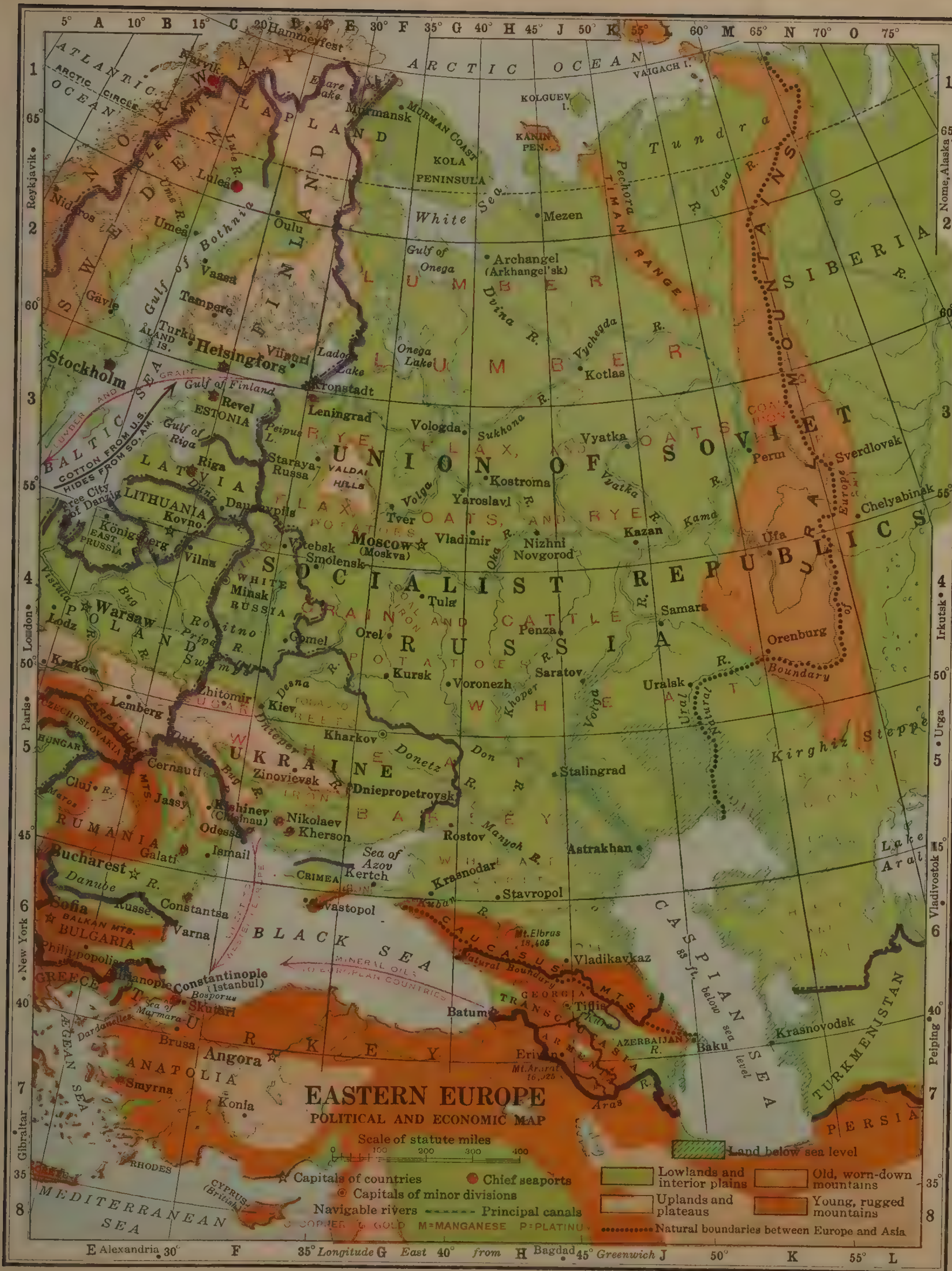
ARCTIC OCEAN
ATLANTIC OCEAN
ARCTIC CIRCLE
NORWAY
SWEDEN
FINLAND
LAPLAND
Hammerfest
Narvik
Murmansk
MURMAN COAST
KOLA PENINSULA
KOLGUEV I.
KANIN PEN.
VAIGACH I.
White Sea
Mezen
Archangel (Arkhangel'sk)
Gulf of Onega
LUMBER
Tundra
TIMAN RANGE
Pechora R.
Usa R.
URAL MOUNTAINS
SIBERIA
Luleå
Umeå
Oulu
Gulf of Bothnia
Vaasa
Tampere
Gävle
Turku
ÅLAND IS.
Helsingfors
Viipuri
Lake Ladoga
Onega Lake
Vychegda R.
Kotlas
Stockholm
BALTIC SEA
Gulf of Finland
Kronstadt
Leningrad
Revel
ESTONIA
Gulf of Riga
Riga
LATVIA
Peipus L.
Staraya Russa
VALDAI HILLS
Vologda
Sukhona R.
Vyatka
Perm
Sverdlovsk
Chelyabinsk
UNION OF SOVIET SOCIALIST REPUBLICS
RUSSIA
RYE
FLAX
OATS AND RYE
OATS
COAL
Kostroma
Yaroslavl
Volga
Tver
Moscow (Moskva)
Vladimir
Nizhni Novgorod
Kazan
Kama
Ufa
LITHUANIA
Kovno
Daugavpils
Free City of Danzig
Königsberg
EAST PRUSSIA
Vilna
Vitebsk
Smolensk
WHITE RUSSIA
Minsk
POTATOES
Oka R.
Tula
GRAIN AND CATTLE
COAL AND IRON
Penza
Samara
Orenburg
Ural R.
Europe Asia Boundary
POLAND
Warsaw
Lodz
Vistula
Bug
Pripet R.
Pinsk Swamps
Krakow
Gomel
Orel
Kursk
Voronezh
Saratov
Uralsk
Khoper R.
Desna
Zhitomir
Kiev
SUGAR BEETS
WHEAT
Lemberg
CARPATHIAN MTS.
CZECHOSLOVAKIA
HUNGARY
Cernauti
Kharkov
Donetz
Don
Stalingrad
Kirghiz Steppe
UKRAINE
Zinovievsk
Dniepropetrovsk
IRON
Dnieper R.
Dniester R.
Cluj
Maros R.
RUMANIA
Jassy
Kishinev (Chisinau)
Odessa
Nikolaev
Kherson
BARLEY
Rostov
Manych R.
Astrakhan
Lake Aral
Galati
Ismail
Bucharest
Danube R.
Sea of Azov
CRIMEA
Kertch
Krasnodar
Stavropol
Kuban R.
Sevastopol
Constantsa
Russe
Sofia
BALKAN MTS.
BULGARIA
Varna
BLACK SEA
Philippopolis
GREECE
Adrianople
Constantinople (Istanbul)
Bosporus
Skutari
Sea of Marmara
Dardanelles
MINERAL OILS TO EUROPEAN COUNTRIES
CAUCASUS MTS.
Mt. Elbrus 18,465
Natural Boundary
Vladikavkaz
GEORGIA
TRANSCAUCASIA
Tiflis
Kura R.
Batum
ARMENIA
Erivan
Mt. Ararat 16,925
Aras R.
AZERBAIJAN
Baku
CASPIAN SEA
85 ft. below sea level
Krasnovodsk
TURKMENISTAN
PERSIA
TURKEY
Brusa
Angora
ANATOLIA
Smyrna
Konia
AEGEAN SEA
RHODES
CYPRUS (British)
MEDITERRANEAN SEA
LUMBER AND GRAIN
COTTON FROM U.S.
HIDES FROM SO. AM.
Reykjavik
London
Paris
New York
Gibraltar
Nome, Alaska
Irkutsk
Urga
Vladivostok
Peiping
Alexandria
Bagdad
35° Longitude East 40° from 45° Greenwich
Scale of statute miles
0 100 200 300 400
★ Capitals of countries
● Chief seaports
◉ Capitals of minor divisions
Navigable rivers
------ Principal canals
C=COPPER G=GOLD M=MANGANESE P=PLATINUM
▨ Land below sea level
🟩 Lowlands and interior plains
□ Uplands and plateaus
□ Old, worn-down mountains
🟧 Young, rugged mountains
•••••••• Natural boundaries between Europe and Asia

EASTERN EUROPE
POLITICAL AND ECONOMIC MAP

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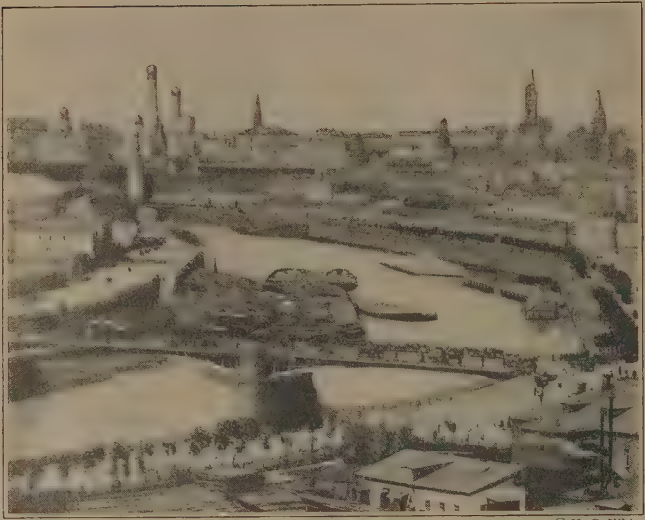

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Figure 288. A view of Moscow, looking toward the Kremlin, or inner city, which is surrounded by a wall. Within the Kremlin are many beautiful buildings, some of which are used as the offices of the central government of the Soviet Union.

Lumbering is important in many places in the European part of the Russian taiga. Large numbers of trees are cut for lumber and pulp wood, and the logs are sent to sawmills and pulp and paper mills located on the streams. Like the countries farther west in the taiga, European Russia plays an important part in supplying the more densely populated countries of western Europe with lumber and pulp wood.

Mining in the Urals. From the map on page 277 name five different mineral products of the Ural Mountains. The central part of these mountains is an important mining section, and the iron ore mined there is used in the manufacture of iron and steel in several of the cities of the region. The platinum mines in the Urals make the Soviet Union one of the two leading countries of the world in the production of this valuable metal. The other great platinum-mining country is in South America. Can you name it?

The Moscow industrial district. On the map on page 277 find Moscow (Moskva), the capital of the Soviet Union (*G3*). Notice that it is located in the central part of European Russia within easy reach of navigable rivers which flow north, south, east, and west. The upper map on page 276 shows that Moscow is located near the southern margin of the taiga, and the lower map shows that it is the "hub" of the railroad system of European Russia. *See Figure 288.*

Moscow has over two million people and is the fourth largest city in Europe. Only London, Berlin, and Paris are larger. Long ago, when Moscow began its growth, the forest provided protection for the people as well as wood for fuel and building, and the rivers provided means of carrying on trade. Today most of the land around Moscow has been cleared for farming, and trade is carried on chiefly by means of the railroads which spread out from the capital city like the spokes of a great wheel.

Moscow is the center of a densely populated area which is one of the two leading industrial districts of the Soviet Union. Turn to the map on page 277 and find the districts south of Moscow where coal and iron ore are mined. These mining districts and the one in the Urals supply Moscow with coal, and with iron and steel which are used in the manufacture of many kinds of machinery and other iron and steel products.

Moscow also has large textile mills where cotton, woolen, and linen goods are made, and many factories where shoes and other leather goods are manufactured. So important are these industries that they require large imports of cotton, wool, hides, and skins from other lands. Flax for the linen mills comes from the flax-growing region farther north in the taiga.

Leningrad — the gateway to the Baltic. Figure 289 is a picture of Leningrad, the second largest city of the Soviet Union. After you have studied the picture, find Leningrad on the map on page 277 (*F3*). At the head of what gulf is it located? What did you learn about this port on page 273?

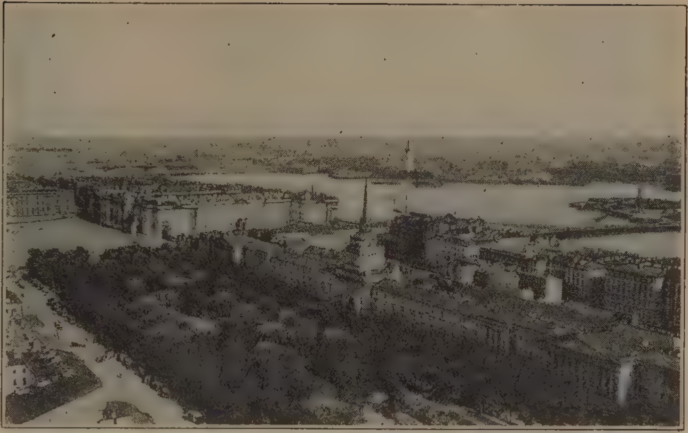


Figure 289. Part of the city of Leningrad, European Russia's only gateway to the Baltic Sea, and the second largest city of the Soviet Union. This city used to be called Petrograd.

Leningrad was founded long ago by a Russian czar so that his country might have a port on the Baltic Sea, and for many years it was the capital of the Russian Empire. During those years it grew to be a large city, and the government helped to establish shipbuilding and other industries there. Never, however, has it been so important as Moscow as a manufacturing city, owing chiefly to its greater distance from Russian sources of coal and iron ore.

Leningrad is chiefly an ocean gateway for the taiga of European Russia, and therefore its leading exports are lumber, grain, and flax. Among its imports raw cotton holds a high place. Can you explain why?

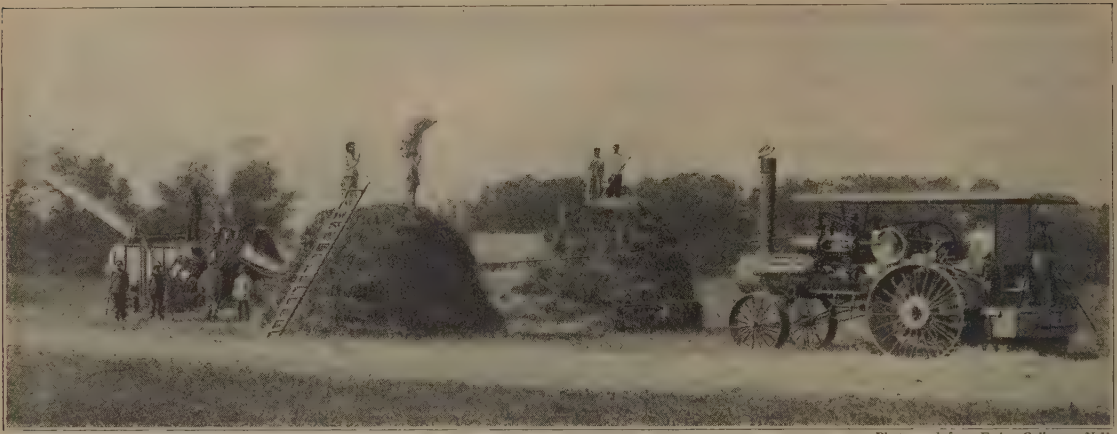
Arctic ports. Some of the lumber of the taiga is shipped from the arctic ports of Archangel and Murmansk. The harbor of Archangel is icebound half the year, but the harbor of Murmansk is ice-free because of a warm current from the Gulf Stream Drift.

The Siberian taiga. Most of the Siberian part of the taiga is a thinly populated wilderness. Except in the extreme south there are no railroads, and towns are few and far between. Besides the forests, which are almost unbroken from the Urals to the Pacific Ocean, there is a wealth of coal and metal ores in the eastern part of the region. At present, however, there is but a little lumbering, and only in a few places is mining of any importance. Not until railroads are built to connect this vast forest with the outside world will its resources be developed to any great extent.

At present the most valuable mineral product of the Siberian taiga is the gold which is obtained by placer mining along some of the streams. Find the gold-mining centers on the lower map on page 276. Find also the coal mines near the Trans-Siberian Railroad. The coal from these mines is used chiefly by the railroad locomotives.

Fur-trapping. The most valuable products of the Siberian taiga are the furs which are obtained by men who hunt and trap the wild animals which live in the forest. The hunters and trappers live in little settlements along the streams, and they kill large numbers of squirrels, hares, foxes, ermines, marmots, and other animals in the winter when the fur is thickest. In the summer traders come to the settlements in boats, and the hunters exchange their winter's "catch" of furs for food supplies, clothing, and other things that they need.

A far eastern port. On the lower map on page 276 find Vladivostok (*N4*). This city is the far eastern seaport of the Soviet Union, and it owes its growth chiefly to the fact that it is the eastern terminus of the Trans-Siberian



Photograph from Ewing Galloway, N.Y.

Figure 290. Threshing wheat in the grassland of European Russia. This is one of the world's greatest wheat-growing regions, and it is the part of the Soviet Union where the largest numbers of farmers use modern machinery in their work. The threshing machine shown in the picture was made in the United States.

Railroad. Since the most densely populated and most productive part of the Soviet Union is in Europe, and since Soviet trade is largely with other countries of that continent, the export and import trade of Vladivostok is much less than that of Leningrad.

Giving reasons. Complete each sentence below by giving reasons for the fact which it states.

1. The tundra of Eurasia is very thinly populated because ________________________.

2. Much more land has been cleared for farming in the southern part of the taiga of European Russia than in the northern part because

________________________________.

3. Rye, oats, and flax are the leading crops of the taiga of European Russia because ________.

4. Far more lumbering is carried on in the taiga of European Russia than in the taiga of Siberia because ________________________.

5. The central portion of the Ural Mountains is well populated because ________________.

6. Moscow is an important manufacturing center because ________________________.

7. The leading exports of Leningrad are lumber, grain, and flax because ________________.

8. Leningrad is a less important manufacturing center than Moscow because ________________.

9. Vladivostok is a less important seaport than Leningrad because ________________________.

The Grassland

A rich farming region. South of the taiga in European Russia and western Siberia is a region much like our prairies, for it is a rich grassland with trees only along the streams. From the upper map on page 276 what can you say about the surface of most of this grassland?

This belt includes most of the famous "black soil" region, and its deep, dark soils are wonderfully fertile. The rainfall is rather light, but fortunately much of it comes in the summer. Because of the climate, the fertile soils, and the level surface, this grassland is the best farming region of the Soviet Union. *See Figure 290.*

The farmers and their work. The farms will remind you of the plains of the Dakotas and the neighboring provinces of Canada, for the farmers raise immense crops of spring wheat and barley, and large quantities of rye, oats, and flax. Wheat is by far the most important money crop, and so many millions of bushels are grown each year that the Soviet Union stands second only to the United States in wheat production. In the western part of the grassland, in the Soviet Republic of

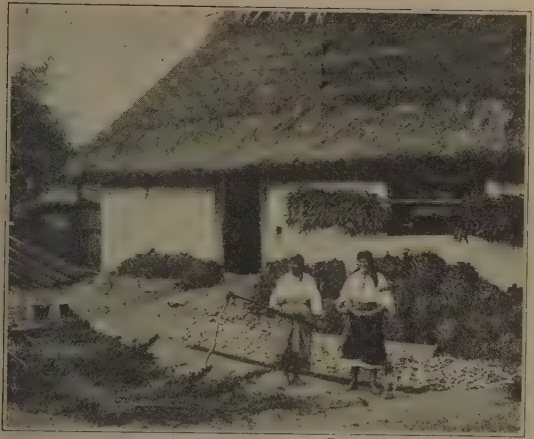

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Figure 291. A farmyard in Ukraine. Notice the ears of corn on the ground and on the pole hung from the eaves of the house. Why is this farmhouse built of different materials from the house shown in Figure 286?

Ukraine, sugar beets and tobacco are very important crops, and in the extreme southwest considerable quantities of corn are grown. *See Figure 291.*

The maps on page 276 show that the Trans-Siberian Railroad passes through the Siberian grassland. By providing a means of shipping farm products to markets in European Russia the railroad has helped greatly in the settlement of this part of Siberia. In addition to raising wheat and other grains, many of the Siberian farmers raise cattle, and some specialize in dairying. The dairy farmers have coöperative creameries where butter is made and sent to European Russia. From there part of the butter is exported, chiefly to Germany and Great Britain.

Of all the farmers in the Soviet Union, those of the grassland are the most prosperous. Their prosperity is due partly to the richness of the land and partly to the fact that many of them use modern farming machinery.

Coal and iron in Ukraine. About three fourths of all the coal and two thirds of all the iron ore produced in the Soviet Union are mined in southern Ukraine. Find the mining centers of this part of the country on the map on page 277, and name another metal ore besides iron which is found there.

The mines of Ukraine supply the only coal in European Russia which is suitable for coking. Because of this and because iron ore and manganese are also abundant in the region, southern Ukraine has become the chief iron-and-steel manufacturing section of the Soviet Union. *See Figure 292.*

Cities and towns of the grassland. All the cities and larger towns of the grassland are market centers for the surrounding farm lands. Chief among them is Kiev, the third largest city of the Soviet Union. Find Kiev on the map on page 277 (*F4*) and notice its location with reference to the coal fields to the northeast and southeast.

As you would expect from its location in a prosperous farming region within easy reach of coal mines, Kiev has become a manufacturing center. Among its industries flour-milling,

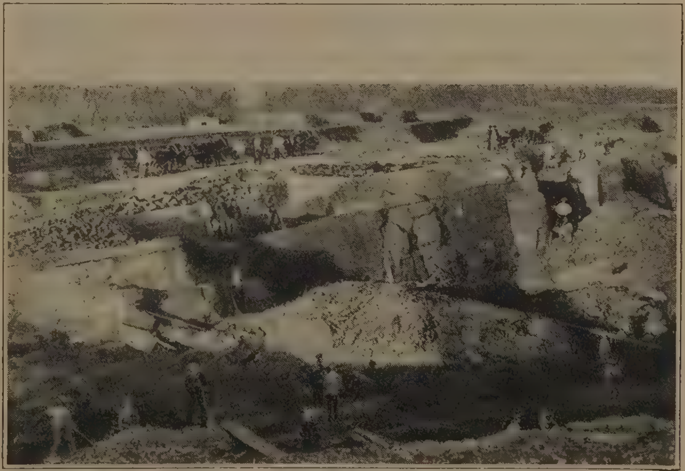


Figure 292. One of the open pits from which iron ore is mined in Ukraine. The ore is dug by hand and is loaded in horse-drawn carts which carry it to cars on the nearest railroad.

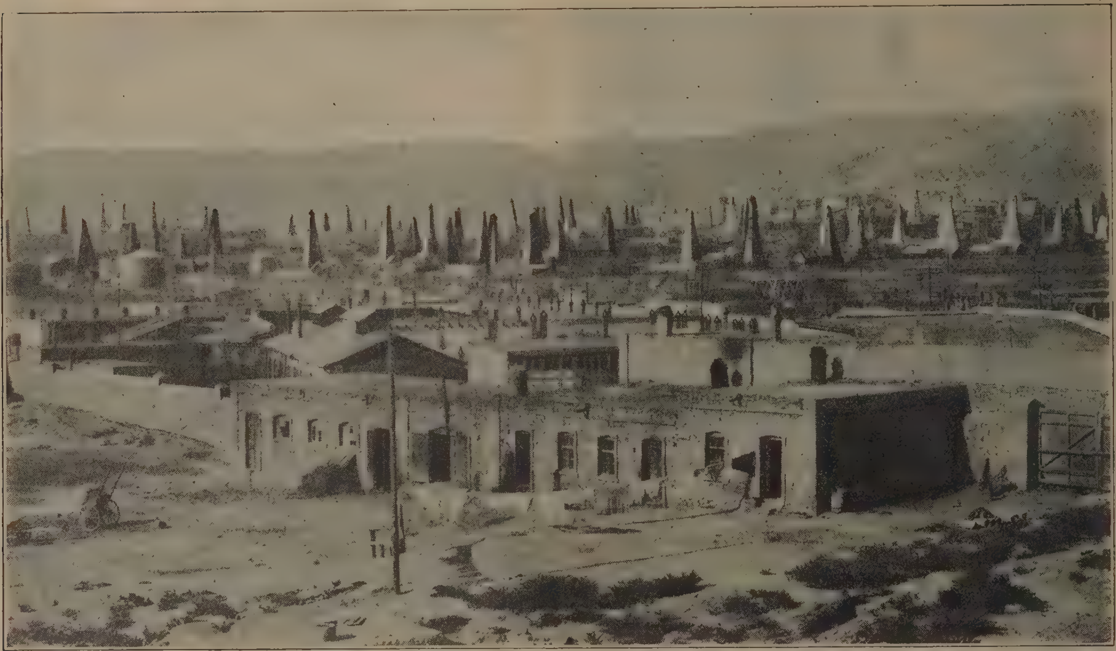


Figure 293. A view in the oil fields near Baku. The production of oil in the Soviet Union is controlled by the government, and the drilling, pumping, and refining are done in modern ways. Great Britain, Italy, and France take more than half the exports of mineral oils from the Soviet Union. Can you explain why?

sugar-refining, and tobacco-manufacturing are especially important. Can you explain why?

The largest city of the Siberian portion of the grassland is Omsk, on the Trans-Siberian Railroad. It is a busy market center where grain and butter from the Siberian farm lands are collected for shipment to European Russia, and from which manufactured goods and other supplies received by railroad are distributed to the farming villages.

Ports on the Black Sea. Turn to the map on page 277 again and name the ports of the Soviet Union on the Black Sea. The largest of these ports is Odessa, which has long been an important shipping point for Russian wheat. Nikolaev and Kherson share the grain trade with Odessa, and all three cities are important flour-milling centers. As you would expect, the exports of wheat from these seaports go chiefly to the industrial countries of Europe which find it necessary to import foodstuffs.

The Caucasus Region

A mountain and valley region. Between the Black Sea and the Caspian Sea the Caucasus Mountains rise more than 10,000 feet above the bordering plain. South of the Caucasus are other mountain ranges which stretch westward into Anatolia and eastward into Persia. Within this mountainous region of the Soviet Union are many fertile valleys where the people raise grain, fruits, and tobacco, and keep cattle, sheep, and goats. The region also has much mineral wealth. Name its mineral products from the map on page 277.

Some rich oil fields. By far the most valuable mineral product of the Caucasus region is the petroleum from the rich oil fields near Baku on the Caspian Sea, and from other fields on the northern margin of the mountains. On the map on page 277 find Baku (*J6*) and Batum (*H6*). Then study Figure 293.

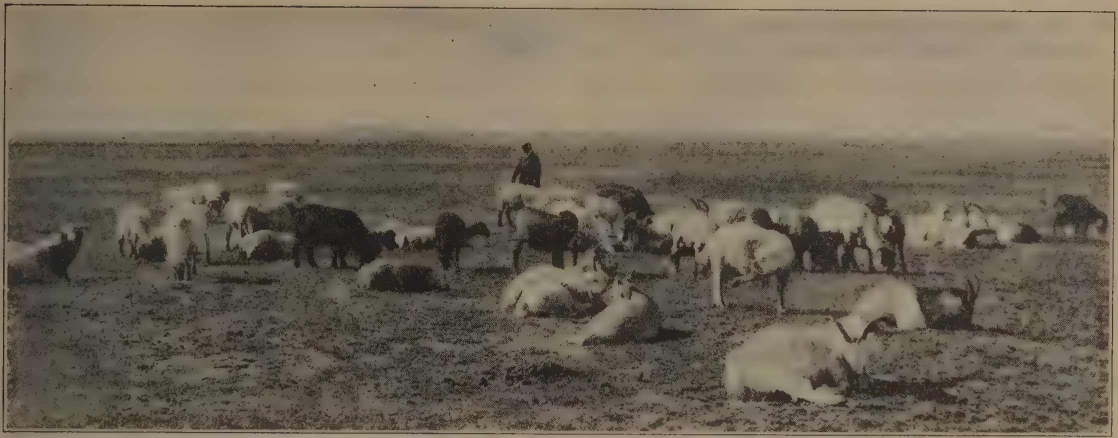


Figure 294. Goats grazing on the poor grass on the Kirghiz Steppe. The wealth of the Kirghiz families is measured by the number of animals which they own. Why is life somewhat easier for these nomads of the steppe than it is for the nomads of the arctic tundra? Why do they keep a greater variety of animals?

At Baku there are large oil refineries from which kerosene and gasoline are sent to various parts of European Russia and southwestern Siberia, and which supply the boats which run on the Caspian Sea and the Volga River with fuel oil. Through a pipe line which runs from Baku to Batum, on the Black Sea, large quantities of crude petroleum are pumped for export to the countries of western Europe. So productive are the oil fields of the Caucasus region that the Soviet Union stands next to the United States and Mexico in the production of petroleum.

The Steppe and the Desert

A land of nomads. South of the grassland, and extending from the Caspian Sea to the mountains of central Asia, is the steppe, a belt of poor grassland where the rainfall is too little for farming. This is a land of nomadic peoples, among whom the Kirghiz are most numerous.

The Kirghiz live in tents and have very little property except their horses, cattle, camels, sheep, and goats. They want little but the food and clothing needed from day to day because they have to move so often in search of fresh pastures for their flocks and herds. They depend so largely on their animals that if there is an unusually dry season, when grass is scarce and many of the animals die, they suffer greatly. *See Figure 294.*

The desert of Turan. South of the Kirghiz Steppe there is a desert region where the rainfall is too little even for the growth of grass. Find this region on the upper map on page 276. In what lowland is it located? Fortunately, the mountains on the east receive more rain, and streams from these mountains provide water for irrigation in the southeastern part of the lowland.

Work in the irrigated lands. In the irrigated lands the people have long raised grain, fruit, and vegetables. More recently they have added cotton to their list of crops, for the Lowland of Turan is far enough south to have a long growing season. The Soviet government is encouraging cotton-growing, hoping that in time these irrigated lands may help considerably in providing the industrial cities of European Russia with raw cotton.

Mulberry trees grow well in this southern region, and the raising of silkworms is important in certain places. Many of the people are skillful in the weaving of silk goods and the making of silk embroideries. Others are rug-makers, using for this work wool from sheep which are raised in the region. In the bazaars of the old cities of Tashkent and Samarkand large quantities of these products of the hand loom and the needle are offered for sale.

On the lower map on page 276 find the railroad which connects the cities named above with Moscow. Before this railroad was built, the people of this southernmost part of the Soviet Union carried on trade and received news from the outside world only by means of slow-moving camel caravans.

Transportation and Trade in the Soviet Union

Transportation within the country. The Soviet Union is such a huge country that the problem of providing means of transportation between all the various sections is a serious one. The lower map on page 276 shows that the European part of the country is well supplied with railroads which connect all the larger interior cities with one another, with the seaports, and with the countries farther west in Europe.

In addition to the railroads of European Russia, there are the many navigable rivers which serve as highways of transportation during the months when they are not frozen over. The map on page 277 will show you that canals have been built to connect the different river systems, providing almost unbroken waterways between the Baltic Sea and the Black and Caspian seas.

Conditions in the Asiatic part of the Union are quite different. The greater part of this vast section of the country is without railroads, and therefore the rivers must serve as the chief highways of transportation. But the longest rivers all flow northward to the icebound Arctic Ocean, and even their upper courses, in the south, are frozen from five to six months in the year. Lack of good means of transportation is the chief reason why the resources of Siberia are so largely unused.

Trade within the country. For the most part trade between the different sections of European Russia is carried on in modern ways, the larger railroad centers and river ports serving as places of business and exchange. Until recently the people in some parts of the country followed an old custom of holding yearly fairs for the buying and selling of goods. The greatest of these fairs was the one held each year from July to September at Nizhni Novgorod on the Volga River. During the fair not only Russian merchants, but merchants from Siberia, Persia, and even China, offered goods for sale and exchange. The Soviet government has decided that this fair shall no longer be held, but Nizhni Novgorod, because of its location, will probably continue to be an important center of trade.

Foreign trade. Since the Soviet Union is so largely an agricultural country, it is not surprising to find that among the exports farm products are very important, especially wheat, butter, eggs, and flax. The most valuable single items among the exports are, however, furs, mineral oils, and lumber. The exports go largely to the countries of western Europe, especially to Germany and Great Britain.

Among the imports, raw cotton holds first place, for the making of cotton goods is one of the leading manufacturing industries of the Soviet Union. The greater part of the raw cotton comes from the United States. Other raw materials which are imported in large quantities are wool, hides and skins, and rubber. Farming machinery, factory machinery, and iron and steel goods are also imported, showing that the Russian iron-and-steel industry does not fully supply the needs of the people. These imports come chiefly from Germany and the United States. Tea, chiefly from China, is also a valuable import, for the Russians are great tea-drinkers.

An occupational test. This test will help you to review what you have learned about the occupations of the people in the various parts of the Soviet Union.

1. The belt of cold, frozen plains in the northern part of the Soviet Union is called the tundra. The few people who live there make their living by keeping herds of Reindeer. They are wandering people, or ------, because --.

2. South of the tundra is the great belt of forests known as the taiga. In the European part of the taiga large numbers of trees are cut for lumber and wood pulp. Much less lumbering is carried on in the Siberian part of the taiga because few people no R.R.

3. In the Siberian part of the taiga the trapping of wild [illegible] for their furs is an important kind of work. The mining of iron and coal is also important in certain places in this part of the taiga. Coal is mined chiefly for use on the [illegible] Railroad.

4. There are a number of important mining centers in the central portion of the ---- Mountains. This region makes the Soviet Union one of the two leading countries of the world in the production of machines. It has iron-and-steel plants because Coal nearby.

5. The best farming land in the Soviet Union is in the belt of grassland, south of the western portion of the taiga, because black soil rainfall [illegible]. The leading money crop of this belt is whe[illegible]. An important export product of the Siberian part of this belt is ------.

6. Extending from the Black Sea to the Caspian Sea are the Caucasus Mountains. In and near these mountains large quantities of petroleum are obtained from beneath the ground.

7. The poor grassland extending eastward from the Caspian Sea is called the ------. The people of this region are Nomads who live wandering lives because hunt fresh pastures.

8. South of the steppe is a desert region, too dry for the growth of grass. This region has very few people except in the southeast, where streams provide water for irrigation. On the irrigated lands the people raise many different ------. The Soviet government is encouraging the people of this part of the country to raise cotton because --------------------.

Some things to explain. Explain why

1. There are great differences in temperature and length of growing season in the Soviet Union. big area

2. The winter weather is much colder in Moscow than in Paris. warm

3. The long coast line of the Soviet Union on the Arctic Ocean is of little use to the people of the country. frozen

4. The most useful coast line of the Soviet Union is the short one on the Black Sea.

5. The rivers of the Soviet Union cannot be used for navigation for as many months in the year as the rivers of France and Germany.

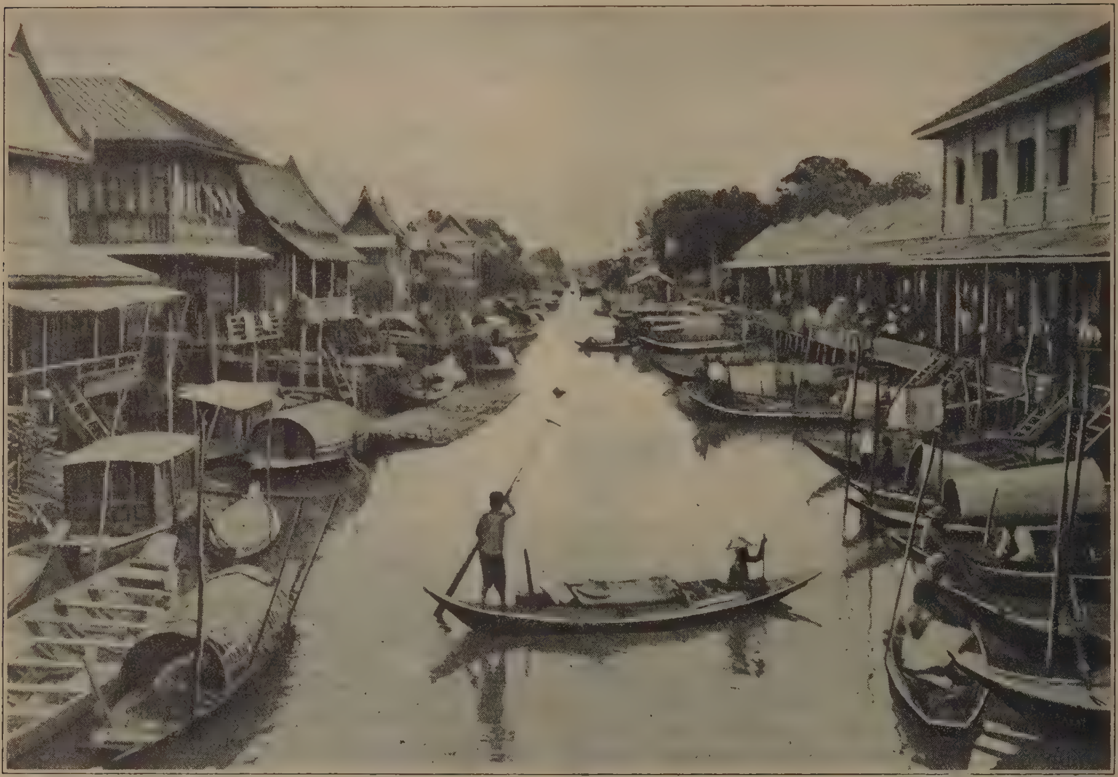
6. The waters of the Caspian Sea are salty.

Naming cities. Name each of the cities of the Soviet Union described below:

1. The capital of the Soviet Union.
2. The seaport on the Gulf of Finland.
3. The far eastern port of the Union.
4. The largest city of the European portion of the grassland. Kiev [illegible]
5. The largest city of the Siberian portion of the grassland. Omsk
6. Three ports on the Black Sea from which much wheat is exported. Odessa, Nikolaev Kirson
7. The city on the shore of the Caspian Sea which is an oil-refining center. Baku Ba
8. The port on the Black Sea from which mineral oils are exported. Bat [illegible]

Finding reminders. Use the map on page 277 to show where in European Russia each person described below would find something to remind him of home.

1. A lumberman from our state of Washington. [illegible]
2. A wheat-farmer from North Dakota. gr
3. A tobacco-grower from Kentucky. grassl
4. A sugar-beet grower from Michigan.
5. A coal-miner from southern Illinois.
6. A potato-grower from Maine.
7. An "oil man" from Oklahoma. Cauca
8. An iron-miner from Minnesota. Uk



By Burton Holmes from Ewing Galloway

Figure 295. A canal in Bangkok. Many of the houses in Bangkok face canals instead of streets, and the people often use boats to get from place to place. The small boats with the arched coverings of straw matting, such as you see in the picture, are called sampans, and are common in all parts of the Orient.

INDEPENDENT COUNTRIES OF THE ORIENT

I. THE KINGDOM OF SIAM

Foreword. East of India and south of the far eastern part of Siberia is the part of Asia which we call the Orient. In the Orient there are three independent countries: the Chinese Republic, the Empire of Japan, and the Kingdom of Siam. Find these countries on the map on page 295. Which one is the largest? Which one is an island empire? Which one lies between the British land of Burma and the French colony of Indo-China? Which one is a tropical country?

Turn to page 71 and find Siam on Figures 64 and 65. What can you say about its rainfall? about the density of its population compared with that of India and China? Like India, Siam is a monsoon land. At what season, then, does it have heavy rains?

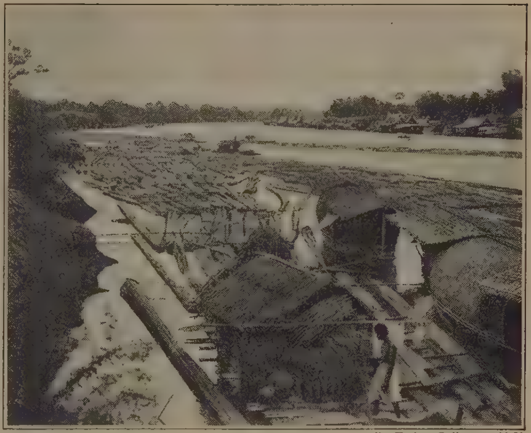
Now find Siam on the map of the Far East on page 298. What is the leading crop of the country? What "climate reasons" can you give for this fact? Judging from the products shown on the map, what other kinds of work besides farming do you think are important in Siam?

Progressive rulers. Several members of the royal family of Siam have visited western Europe, and some of the princes have been educated in England and America. In this way they have become acquainted with Western ways of doing work. In recent years they have employed British, French, and American advisers to help them to introduce modern methods of farming, lumbering, and mining into their country. Thus Siam is making good progress in the development of its resources.

A rice-growing country. The map on page 298 shows that there are mountains along the northern and western borders of Siam, but that most of the country lies in a lowland region which it shares with French Indo-China. The lowland, with its year-round warmth and its monsoon rains, is well suited to the raising of rice, and in Siam, as in French Indo-China, rice is by far the most important crop. The people depend on rice as their chief foodstuff, but they raise so much that they have a large surplus to export to the more densely populated lands of China, Japan, and Java.

The people raise other tropical crops, but none of them compares in importance with rice. In the part of Siam which extends into the Malay Peninsula rubber plantations have been started, and the exports of rubber are growing in importance.

Forest work. As you would expect, there are thick, tropical forests in this warm, moist country, and, like the forests of Burma and French Indo-China, they contain valuable teak trees. Large numbers of teakwood logs are cut in the forests, and elephants are used to carry them to the Menam River. The logs are too heavy to float, and so they are loaded on bamboo rafts to be sent downstream for export. *See Figure 296.*



By Ewing Galloway, N.Y.

Figure 296. Teakwood logs in the Menam River in Siam. Some of the men in charge of floating the logs downstream live in little huts on the rafts.

Mineral wealth. Siam is fortunate in having coal and valuable ores of tin, zinc, iron, and other metals. Modern methods of mining are being introduced, and greater use of the mineral resources will certainly be made in the future. At present the most important mineral product is tin, which ranks next to rice among the exports of Siam. You will recall that the richest tin mines of the world are in the part of the Malay Peninsula which is under British control. Where in Siam, then, do you think the tin mines are located? Check your answer by the map on page 298.

Bangkok. Figure 295 is a picture taken in Bangkok, the capital, the largest city, and the seaport of Siam. Find Bangkok on the map on page 298 (*B5*). Near the mouth of what river is it located? What reason can you give for the fact that this city has many mills for cleaning and polishing rice?

Although Bangkok is the seaport of Siam, large ocean ships do not go upstream to its wharves because the mouth of the Menam River is too shallow. Instead, they anchor as near the mouth of the river as possible, and their cargoes are transferred to smaller boats. The smaller boats carry the goods up to Bangkok and come back loaded with rice and other Siamese products for the ships to carry away. Because of this handicap to shipping, some of the trade of Siam with distant lands is carried on through the great British port of Singapore. In what two ways may goods be sent back and forth between Bangkok and Singapore? What are the leading imports of Siam, and where do they come from?

A summary. The countries of southern Asia and the Orient which you have studied thus far are India and Burma, Ceylon, British Malaya, the Dutch East Indies, Siam, and French Indo-China. Summarize some of the important facts about these countries by completing the sentences in the next column.

1. Among these countries ____ is the only one which is independent. The others belong to countries in ______.

2. In all these countries ____ is the chief grain crop and the chief foodstuff of the people.

3. The leading forest product of Burma, Siam, and French Indo-China is _____.

4. The important raw material produced on plantations in British Malaya, Ceylon, the Dutch East Indies, and Siam is ______.

5. The metal ore mined in the Malay Peninsula and shipped to many parts of the world is ___.

II. THE EMPIRE OF JAPAN

1. FOREWORD

An island people. Thousands of years ago some of the people who lived in the land which we call China traveled eastward and settled in the peninsula of Korea, or Chosen. Others traveled eastward from China and Korea in small boats, and settled in the islands which we now call Japan. For many hundreds of years the island people of Japan lived by themselves, knowing little or nothing of other nations. Thus they came to have many customs quite different from those of the Koreans and of the Chinese.

All three of these groups of people, however,— the Japanese, the Koreans, and the Chinese,— belong to the Mongolian, or yellow, race, and they are more like one another than like any other nations in the world. We call them the Oriental, or Eastern, peoples. We also speak of the Oriental civilization, which differs in many ways from the Western civilization of Europe and the Americas.

The opening-up of Japan to trade. In 1854 the United States sent a fleet to Japan to make a commercial treaty, or agreement, so that trade between the two countries might be carried on. This, and other treaties with other countries, opened up Japan to world trade, and was the beginning of a period of growth for the Japanese which has made them one of the leading nations of the world today.

Our interest in Japan. Almost everybody in the United States has now become somewhat acquainted with Japan. The Japanese export more raw silk than any other people in the world, and our merchants buy vast quantities of it. We, in turn, sell more dollars' worth of our exports to Japan than to any other country of Asia. In all our larger cities there are Japanese shops where toys, trinkets, china, pottery, and many other things made in Japan are sold, and in our art galleries and museums many beautiful objects of art from Japan are displayed.

Many Japanese young people come to this country to study in our colleges and universities, and many Japanese-American friendships are made in this way. Each year more and more Americans visit Japan, many simply to enjoy the beauty of the country, and others to transact business or to study the life and work of the Japanese people.

Some years ago the Japanese sent as a present to the people of the United States a number of their cherry trees. Those trees were planted on the banks of the Potomac River in our capital city of Washington, and each spring, when they are pink with blossoms, they serve as a beautiful reminder of Japan.

A problem to solve. As you study this section, find reasons why Japan, which less than a hundred years ago was almost unknown to the Western nations, is one of the most important countries in the world today. In solving this problem you will find it helpful to compare the Japanese islands and their resources with the British Isles and their resources. As you do so, see if you can discover any truth in the saying that "Japan is becoming the Britain of the Orient."

Courtesy of Canadian Pacific Steamships

Figure 297. Fujiyama, thought by many people to be the most beautiful mountain peak in the world. It rises to a height of more than 12,000 feet above the sea, and its summit is usually covered with snow. To the Japanese, Fujiyama is a sacred mountain.

2. JAPAN PROPER

Map studies. Begin your study of Japan by working out the following map studies.

1. Turn to the map of Eurasia on page 295 and find Cape Lopatka, the southernmost point of the Kamchatka Peninsula of eastern Asia (*O3*). With your finger trace the purple line which starts at that cape and runs westward and southward, curving around the southern end of Taiwan. All the lands on the Pacific side of that line are parts of the Empire of Japan.

2. What part of the mainland of Asia belongs to the Japanese? Korea 3. What island farther north is divided politically between Japan and the Soviet Union? 4. Through what island belonging to the Japanese does the tropic of Cancer pass?

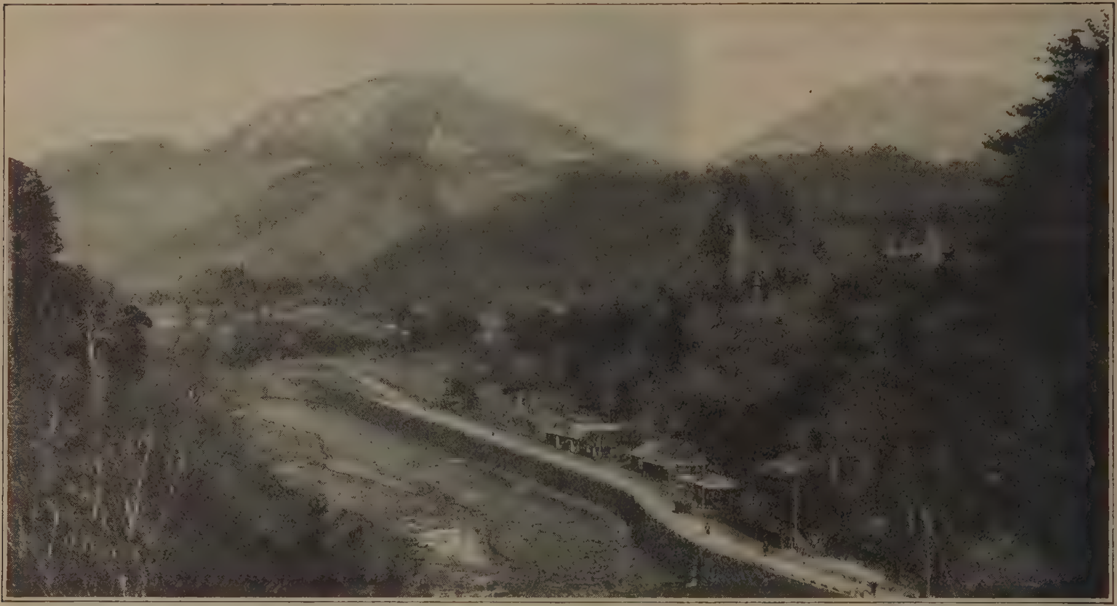
5. Now find the islands of Honshu, Shikoku, Kyushu (*M5*), and Hokkaido (*N4*). These four islands, with the many small islands close by, form what is known as Japan proper. They are the islands where the Japanese nation began its growth, and from which the Japanese have extended their control over lands farther north, west, and south. When we use the name Japan, we mean these very important islands, rather than the entire Japanese Empire.

6. What statement can you make regarding the location of the islands of Japan and of the British Isles with reference to the great land mass of Eurasia? 7. What differences in the surface of the land do you find between the British Isles and the islands of Japan?

8. Now turn to page 71. Notice that Honshu, Shikoku, and Kyushu are among the most densely populated parts of Asia. 9. How do they compare with Great Britain and Ireland in density of population? in rainfall?

Some comparisons. You have discovered several interesting facts from the maps: (1) that the Japanese occupy a group of islands off the eastern coast of Eurasia, just as the British occupy a group of islands a little farther north off the western coast of Eurasia; (2) that both groups of islands have abundant rain for agriculture; (3) that the islands of Japan are much more mountainous than the British Isles; and (4) that Honshu, Shikoku, and Kyushu are even more densely populated than Great Britain and Ireland.

As you read further, find reasons why so many people are able to make a living in the mountainous islands of Japan.



Courtesy of Canadian Pacific Steamships

Figure 298. A beautiful valley among the mountains of Honshu, the largest of the islands of Japan. Notice the broad, well-paved automobile road which has been built along the river bank. Notice also the thick forests which cover the foothills, and the patches of snow lying on the higher mountain peaks in the distance.

The lands of Japan. Most travelers from our country to Japan sail from one of our Pacific seaports to the Japanese port of Yokohama, on the island of Honshu. If they are fortunate enough to enter the harbor of Yokohama on a bright, clear day, they see, off to the west, the beautiful mountain which the Japanese call Fujiyama, or Mount Fuji. *See Figure 297.*

Mount Fuji is the highest of the many volcanic peaks of Japan, which have been built up by great volcanic eruptions and by outpourings of lava. Can you name some peaks in Europe and the Americas which have been built up in the same way? Many of the Japanese volcanoes are still active, but there has been no eruption of Fujiyama for over two hundred years.

Most of the islands of Japan are mountainous, and the mountains are young, high, and rugged. In many places they are so steep that they can be used only for growing trees. Because of this, and of the abundant rainfall, forests cover about half of the surface in Japan. *See Figure 298.*

You will remember that many regions of young mountains suffer from earthquakes. In the islands of Japan slight earthquakes occur almost every day, and once in every few years a very severe earthquake causes much damage and loss of life.

Near the coast and in the valleys among the mountains of Japan there are lowlands, but most of them are very small. The only large plain is the one in which Tokyo, the capital of the country, is located. Since so much of the country is made up of steep mountain slopes, the lowland areas are greatly overcrowded with people. In Honshu, for example, there are over 400 people to the square mile, but they are so unevenly distributed that the lowlands have more than 1000 people to the square mile. No part of the continent of Europe is so densely populated as that.

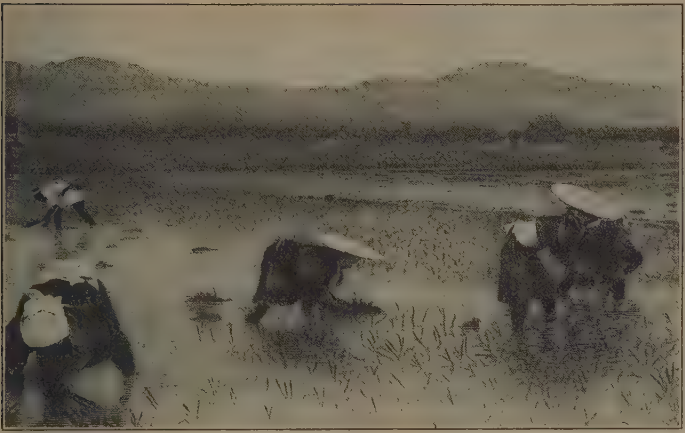


Figure 299. Transplanting rice in Japan. Both men and women work in the wet, muddy paddy fields, setting out the young rice plants. You can easily imagine what hard, tiresome work this is.

Farming in Japan

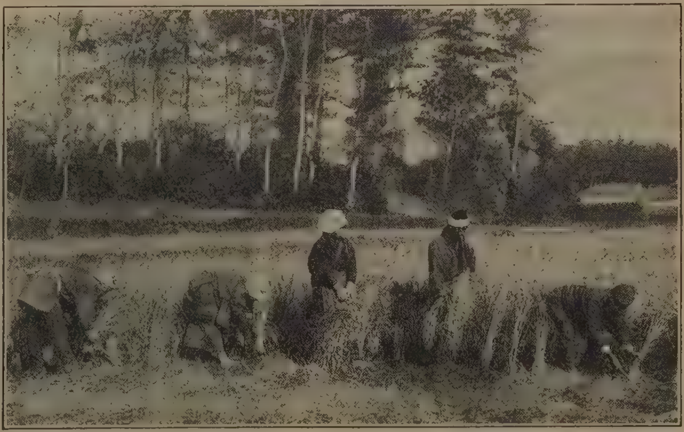
A land of very small farms. Because Japan is so mountainous, only about 16 per cent of the land is suitable for farming, yet more of the Japanese are engaged in farming than in all the other occupations combined. Since the amount of farm land is so limited, and the farming population is so large, the farms are very small. The average farmer has only two and a half acres of land on which to raise crops to support his family. Some farmers have five or six acres, while others have only one or two.

Since the farms are so small, the farmers cultivate every bit of land possible, and they tend their crops with the greatest care so that the land may produce all that it possibly can. Only in this way can such large numbers of people make a living by farming in this overcrowded country, and although they work hard, many of them are very poor.

In traveling through the farm lands of Japan you will notice that few of the farmers keep any cattle or sheep. That is because as much land as possible must be used to raise food for the people, and little can be spared for pasture or forage crops. For this reason meat and dairy products are expensive luxuries in Japan.

The chief crop. Rice is by far the most important crop in Japan, just as it is in the other Oriental countries. One reason for this is that the climate is well suited to rice-growing. Another reason is that in these densely populated countries the people must get as much food from the soil as possible, and an acre of land will produce a greater quantity of rice than of any other grain which they can raise, and at less cost. For these reasons the Oriental nations long ago came to depend on rice as their chief food.

Rice-growing. Early each spring the farmers plant the rice seeds in beds which have been enriched with fertilizers. In these seedbeds the plants are allowed to grow until they are a few inches above the ground. In the



Courtesy of Toyo Kaisen Kaisha

Figure 300. Harvesting rice in Japan. The grain is cut by hand with sickles or knives, and tied in bundles. At harvest time, as at transplanting time, the women help the men in the fields.

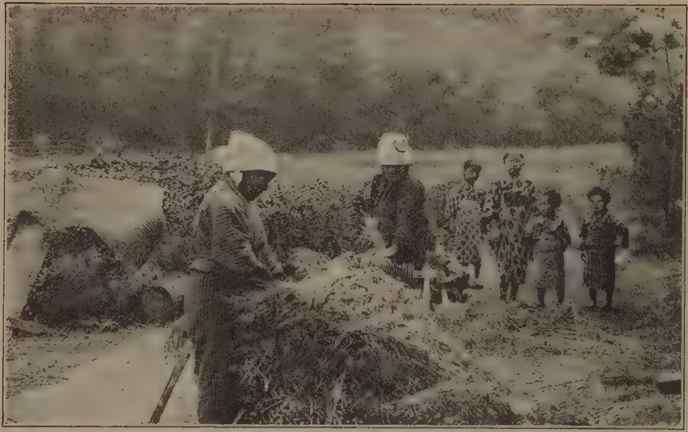


Figure 301. Japanese children watching their mothers thresh rice. Notice that the women are pulling the grain through a large wooden comb which strips the seeds from the stalks.

meantime, the farmers plow the fields to which the rice plants are soon to be transplanted. These are called paddy fields.

When the time for transplanting comes, the young plants are carefully pulled from the seed-beds, tied in bundles, and set out in the paddy fields, which are flooded with water to a depth of six to twelve inches. Figure 299 shows how this work is done. During the early part of the growth of the rice, the paddy fields are flooded from time to time, for the plants need large quantities of water to grow well. Later, when the grain begins to ripen, the fields are drained.

Figure 300 shows how the rice is harvested. After it has been cut and tied in bundles, the bundles are hung up to dry in the sun, and in a few days the grain is ready for threshing. Figure 301 shows one of the ways in which the Japanese separate the seeds from the stalks, or straw. Some of the farmers have simple threshing machines like the one shown in Figure 302.

How the rice crop is used. Every farmer tries to grow rice enough to supply his family, and, if possible, a little more. Those who have more than they need send their surplus to the cities, where there is always a good market for it. Altogether, the Japanese farmers raise many millions of bushels of rice on their little farms, yet they cannot fully supply the needs of the country, and Japan imports rice from India, Siam, and French Indo-China.

Although the Japanese raise rice chiefly for food, they make many different uses of the straw. The farmers thatch their houses with rice straw, and most of the country people wear straw sandals. The broad-brimmed hats such as you see in Figures 299 and 302 are also made of rice straw, and large quantities of mats and baskets are made of the same material. None of the rice straw is wasted, for all that is not used in other ways is put back on the fields as fertilizer.

Other food crops. In addition to rice, the Japanese farmers raise considerable quantities

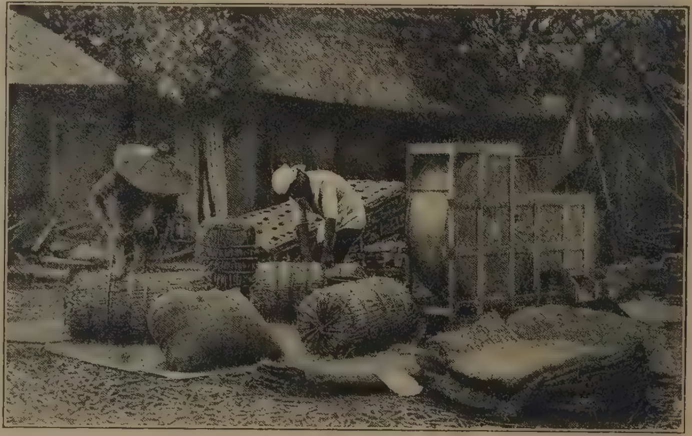


Figure 302. Japanese farmers tying up bundles of rice to be sent to market. The outer covering of the bundles is matting made of rice straw. At the right is a simple threshing machine.

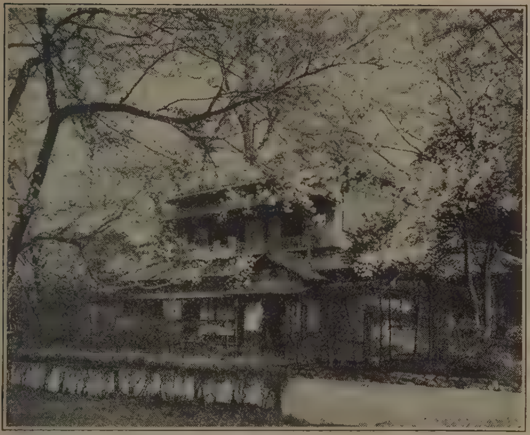


Figure 303. Cherry-blossom time in Japan. This picture shows the house of a well-to-do Japanese gentleman surrounded by blossoming cherry trees.

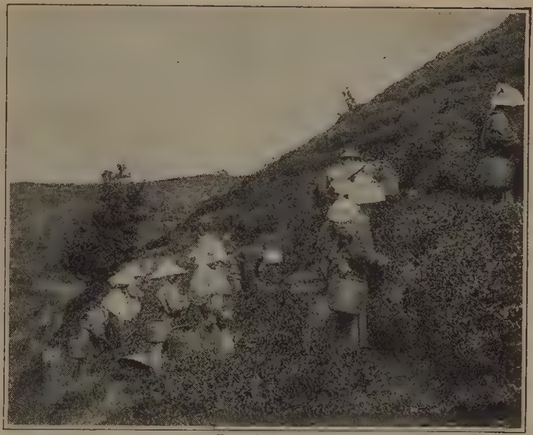


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Figure 304. Japanese women picking tea leaves on a steep hillside. Look carefully, and you will see a Japanese baby strapped on his mother's back.

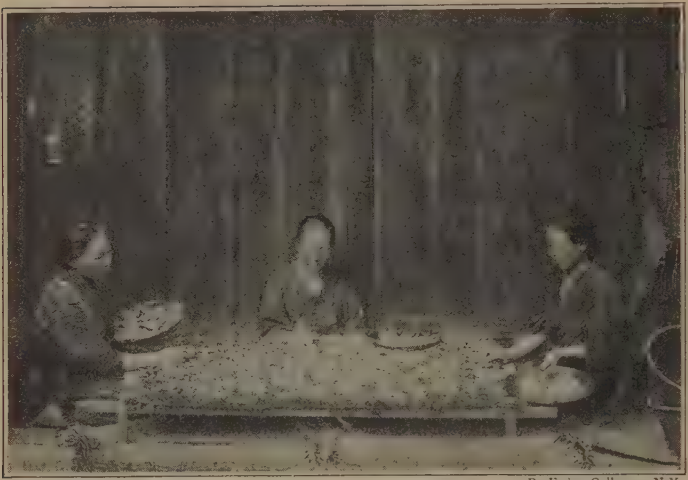
of wheat, barley, and rye. These are the chief grain crops in the northern parts of the country that are too cool for rice, and in the rice-growing lands they are winter crops, planted in September or October, after the rice has been harvested. The Japanese also raise large quantities of beans, peas, and other vegetables, and many different kinds of fruits, such as peaches, pears, and plums.

Japanese cherry trees. No doubt you have heard of the many cherry trees in Japan. The Japanese do not cultivate these trees for their fruit, but simply for their beauty. The Japanese are lovers of everything that is beautiful, and they look forward with the greatest pleasure to the springtime, when the cherry trees are covered with delicate pink blossoms. *See Figure 303.*

The tea crop. The food crops grown by the farmers of Japan are for use within the country, and there is no surplus for export. The chief crop grown partly for export is tea. The tea bushes are usually found on hillsides which are too steep for field crops and where the drainage is good. Two or three crops of tea leaves are picked by the women and girls each summer, and about one third of the yearly crop is exported, chiefly to the United States. After traveling through Japan you will understand why the greater part of the crop is used within the country, for all the Japanese, rich and poor, drink tea with every meal. *See Figure 304.*

Silk — the greatest export product. People often speak of raw silk as a money crop. It does not come directly from the soil, like cotton, but silkworms must have mulberry leaves to feed on, and in the silk-producing countries it is chiefly the farming people who cultivate the mulberry trees and care for the silkworms. In Japan one third of all the farmers raise silkworms, and raw silk is by far the greatest money crop and the most valuable export product of the country. Millions and millions of dollars' worth of raw silk are exported each year, and more than nine tenths of it comes to the United States.

Caring for the silkworms. Mulberry trees grow well in many of the warm temperate parts of the world, but the raising of silkworms requires so much care and handwork that raw silk is produced only in countries which, like Japan, are so densely populated that labor is cheap. For this reason the Oriental countries



By Ewing Galloway, N.Y.

Figure 305. Japanese women removing silkworms from the trays of mulberry leaves where they have been feeding. The worms are full grown, and are ready to begin spinning their cocoons.

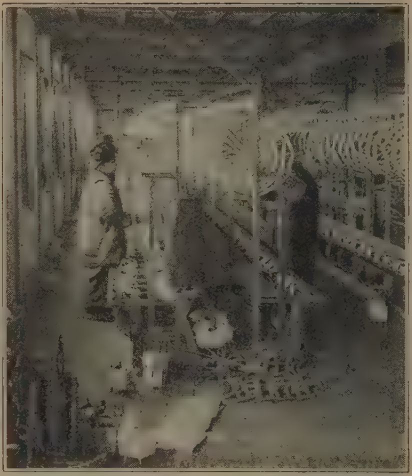


Figure 306. A Japanese girl at work in a silk filature, reeling fibers from silkworm cocoons.

of Japan and China produce far more raw silk than do any other countries in the world.

The raising of silkworms is carried on in the farmers' homes, and the women and children do the work. After the tiny worms hatch from the eggs, they are spread out on clean trays, and for three or four weeks fresh mulberry leaves are gathered several times a day to feed them. This is the period of growth for the worms, and at the end of it they stop eating and begin to spin the delicate silvery fiber which they wind around themselves, making cocoons about an inch long. *See Figure 305.*

Preparing raw silk for market. Years ago all the reeling, or unwinding, of the fibers from the cocoons was done by hand by the Japanese women who raised the silkworms. Now most of the farmers sell their cocoons to dealers who, in turn, sell them to factories called *filatures.* In the filatures women are employed to do the reeling with the help of machinery. In the reeling several fibers are twisted together to form a single strand of raw silk. The strands are then made up in bundles called skeins, and the skeins are packed in bales to be sent to factories in Japan or to the seaports for export. *See Figure 306.*

Sentences to complete. Prove that you have learned the more important facts about farming in Japan by completing the following sentences correctly.

1. Only a small proportion of the land in Japan is suitable for farming because ____.

2. Japanese farms are very small because ____.

3. Rice is the chief food crop because ____.

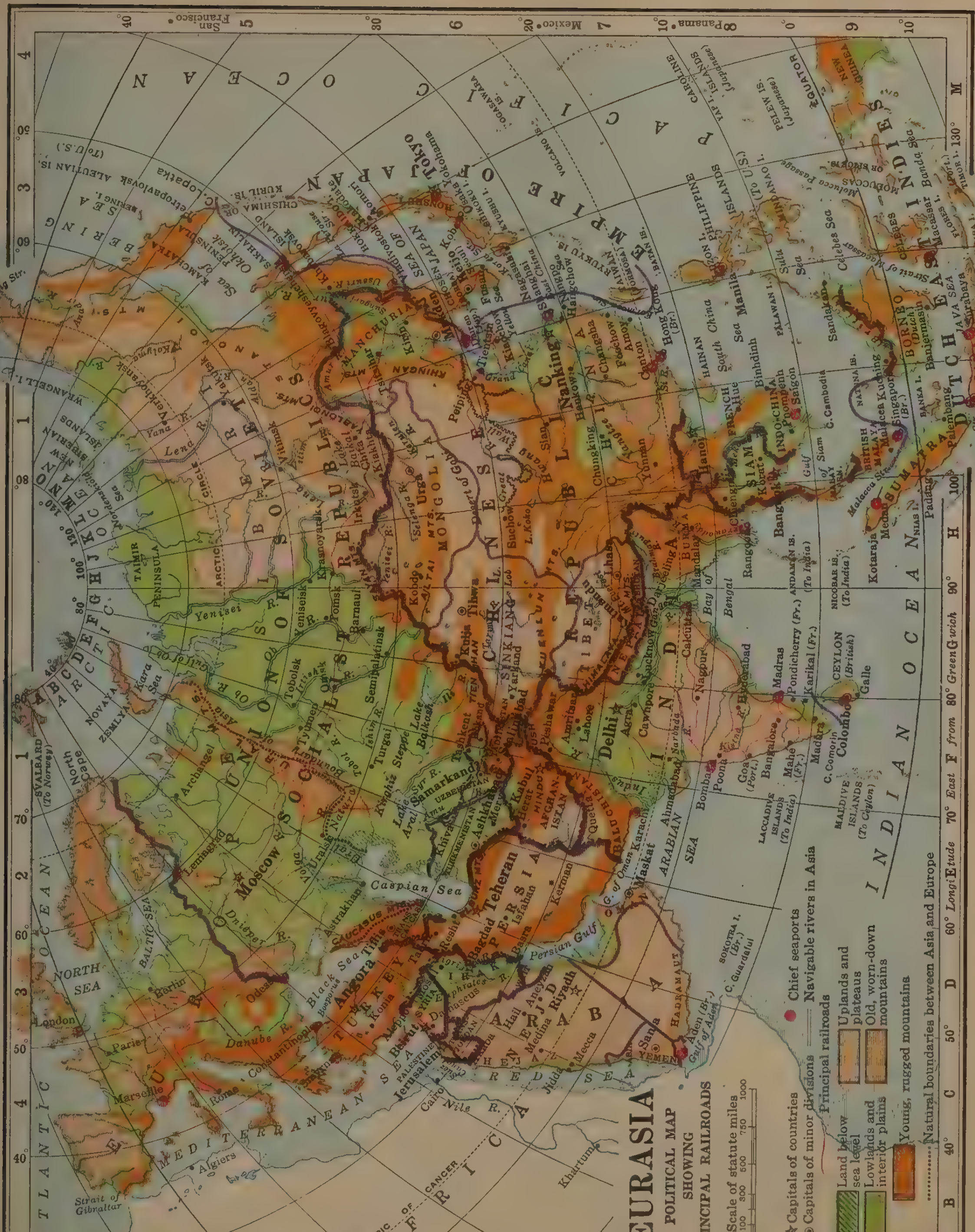
4. There are no surplus food crops for export because ________________________________.

5. Few cattle or sheep are raised in Japan because ________________________________.

6. The Japanese raise large quantities of tea because ________________________________.

7. Japan is one of the two great silk-producing countries because ____.

Special credit work. Find out what Oriental people discovered that the fibers of silkworm cocoons could be used to make cloth, and how the discovery happened to be made.



EURASIA

POLITICAL MAP SHOWING PRINCIPAL RAILROADS

Scale of statute miles
0 100 300 500 750 1000
★ Capitals of countries
◉ Capitals of minor divisions
● Chief seaports
Navigable rivers in Asia
Principal railroads
Land below sea level
Lowlands and interior plains
Uplands and plateaus
Old, worn-down mountains
Young, rugged mountains
Natural boundaries between Asia and Europe
Longitude 70° East from Greenwich
©Ginn and Company
ATLANTIC OCEAN
NORTH SEA
BALTIC SEA
MEDITERRANEAN SEA
BLACK SEA
Caspian Sea
ARCTIC OCEAN
BERING SEA
PACIFIC OCEAN
INDIAN OCEAN
ARABIAN SEA
Bay of Bengal
South China Sea
UNION OF SOVIET SOCIALIST REPUBLICS
CHINESE REPUBLIC
JAPAN
EMPIRE OF JAPAN
MONGOLIA
MANCHURIA
TIBET
SINKIANG
INDIA
PERSIA
AFGHANISTAN
BALUCHISTAN
ARABIA
TURKEY
IRAQ
SYRIA
PALESTINE
SIAM
FRENCH INDO-CHINA
BRITISH MALAYA
DUTCH EAST INDIES
PHILIPPINE ISLANDS
AFRICA
EUROPE
TROPIC OF CANCER
ARCTIC CIRCLE
EQUATOR
London
Paris
Berlin
Moscow
Leningrad
Constantinople
Angora
Teheran
Kabul
Delhi
Calcutta
Bombay
Madras
Colombo
Nanking
Peiping
Tokyo
Manila
Batavia
Singapore
Hong Kong
Canton
Mecca
Jerusalem
Cairo

Figure 307. Japanese fishermen getting ready to go out to the fishing grounds. There are over a million people in Japan who depend on fishing for their entire living, and even larger numbers of the Japanese depend partly on fishing and partly on farming.

Fisheries, Forests, and Mines

Japanese fisheries. Like the British, the Japanese have long depended on the sea for part of their food supply, and for the same reasons: (1) because the dense population demands large quantities of food, and the land that can be used for crops is limited; (2) because there are many good harbors along the coast; and (3) because the islands are bordered by waters rich in fish.

The best fishing grounds of Japan are the cold waters around the islands north of Honshu,— waters in about the same latitude as the great fishing grounds of the North Atlantic Ocean. Altogether, there are more than a million Japanese fishermen, and they catch huge quantities of cod, herring, mackerel, and other fish which help greatly in supplying the millions of people in the country with food. *See Figure 307.*

Oysters, crabs, lobsters, and other shellfish are plentiful in the waters bordering Japan, and large quantities are gathered by the people who live along the coast. The canning of crab meat has become an important industry, and canned crab meat is one of the products which the Japanese export to our country.

Culture pearls. The Japanese have discovered a wonderful process by which oysters can be made to produce pearls. This is done by opening the young oyster and placing a tiny grain of sand inside the shell. In time the oyster will cover the grain of sand with layer after layer of a milk-white substance which forms the pearl. Such pearls are called "culture pearls," and they bring high prices.

Forest products of Japan. The most valuable forests of Japan are those in the northern half of Honshu and in Hokkaido and Japanese Sakhalin, where, because of the cool climate, the trees are mostly evergreen softwoods. In this northern part of the empire the Japanese have started pulp and paper mills, and each year they are producing more of the paper which they need.

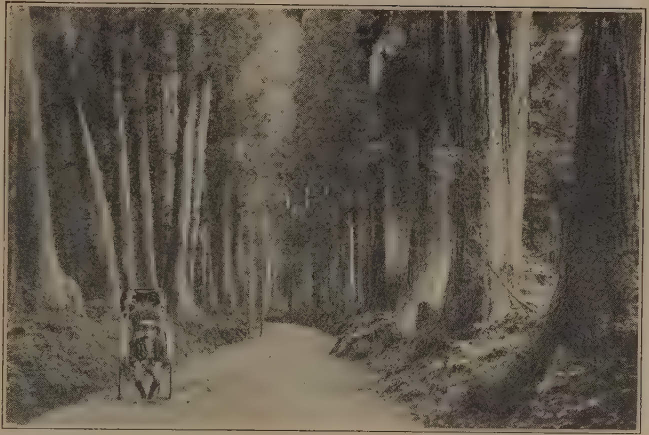
About one third of the lumber cut in Japan comes from the beautiful cone-bearing trees known as *cryptomeria.* These trees belong to the same great tree family as the giant sequoias of California, and they grow to heights of nearly 200 feet. In many parts of Japan the government is reforesting cut-over areas, and the cryptomeria are the trees used most for this purpose. *See Figure 308.*

Another very valuable tree in Japan is the bamboo, which grows in the warmer parts of the islands. It grows rapidly and provides a light and exceedingly useful wood. The Japanese people build many of their houses of bamboo and make furniture of the same material. Houses built of light wood are safer in Japan than houses of heavier wood because they stand the earthquake shocks better.

Mineral resources. Judging from the map on page 298, what do you think are the most valuable mineral products of Japan? Do you think the Japanese are well supplied with the mineral resources that are most necessary for manufacturing? Give reasons for your answer.

The most valuable of Japan's mineral resources is the coal which is mined in Kyushu and Hokkaido, and which provides the people with fuel for manufacturing. In addition to coal there is the petroleum of Honshu, but the wells there supply only a small part of the needs of the country, and mineral oils are imported. From what countries do they come?

Among the metal ores mined in Japan copper is by far the most valuable, and Japan stands next to the United States, Chile, and Belgian Congo in copper production. Gold, silver, and a few other metal ores are also mined, but in much smaller quantities.



Courtesy of Miss Louise Fay

Figure 308. Cryptomeria trees in Honshu. Notice the size of the tree trunks at the right. The road in the picture runs for forty miles through a cryptomeria forest.

The islands of Japan are lacking in good supplies of iron ore; but fortunately there are iron mines in the peninsula of Chosen, and others in China are under Japanese control. Thus with its home supplies of coal and with iron ore under its control in the mainland of Asia, Japan is well prepared to manufacture products of iron and steel.

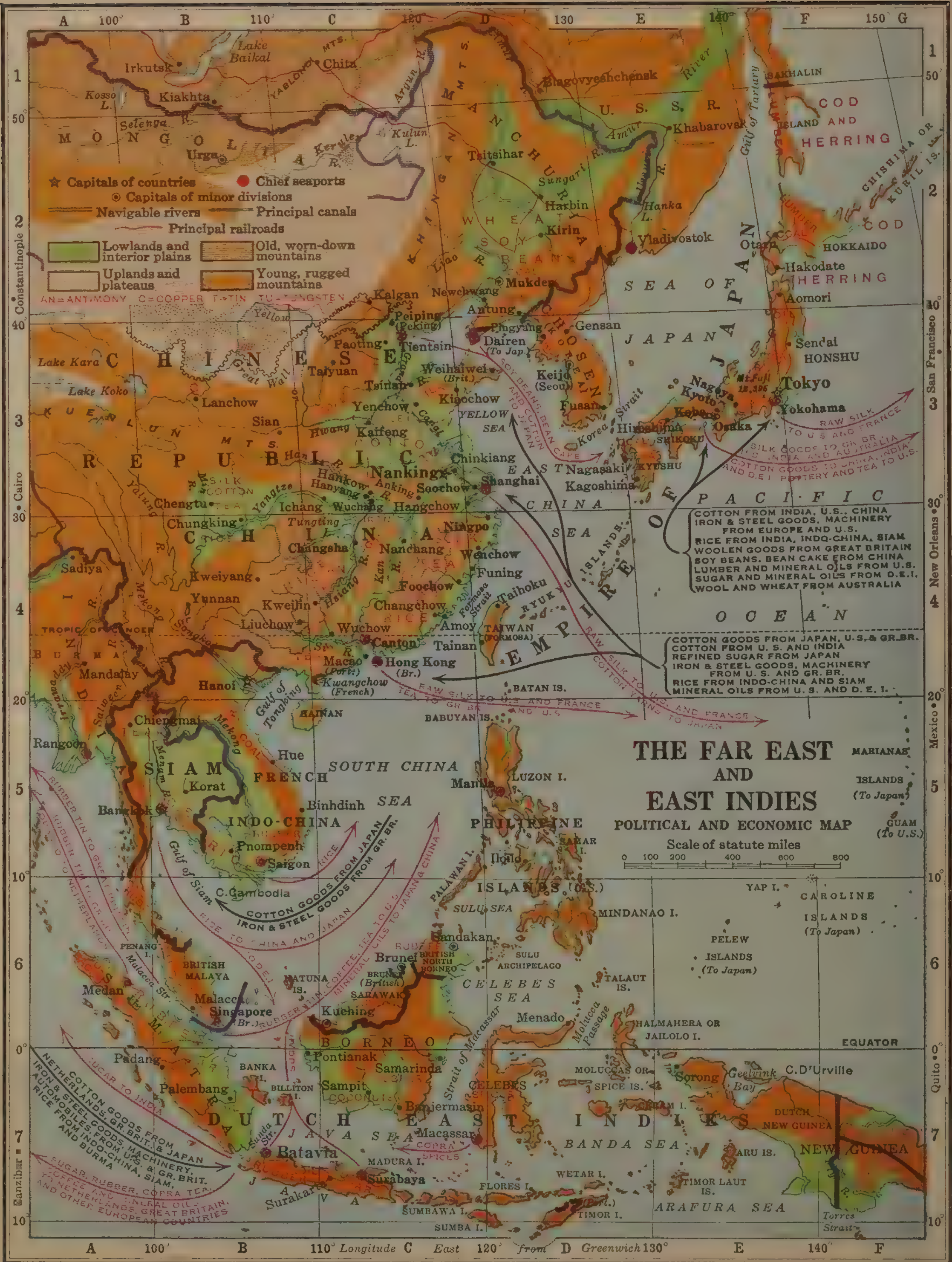
Hydroelectric power. Since Japan is a mountainous country with abundant rainfall, it has many swift-flowing streams. Already the Japanese have harnessed the water power of some of their streams to make hydroelectricity, and much more hydroelectric power is likely to be developed in the future. Thus electric power, as well as steam power from coal, is at hand for use in manufacturing.

Cities, Manufacturing, and Trade

Contrasts between city and country. In the country districts of Japan the people live and work much as their ancestors have done for hundreds of years, cultivating the land with the same painstaking care, and content with the simplest of food, clothing, and houses. But in the cities we shall see another and newer Japan, where great changes have taken place since the Japanese have come in touch with the Western nations. Among the most important of these changes are the development of manufacturing and the growth of foreign trade.

The six largest cities of Japan are Osaka, Tokyo, Nagoya, Kyoto, Kobe, and Yokohama. Osaka, with over two million people, and Tokyo, with nearly two million, are the largest cities in Asia. Find these six cities on the map on page 298 (*E–F3*) and notice that they are all located in lowlands in Honshu, the largest and most important of the islands of Japan. Which one is the capital of Japan? What three are seaports?

Tokyo and its port. Tokyo, the capital and second largest city of Japan, is located at the head of Tokyo Bay in the largest and most densely populated lowland region of Honshu. Its harbor is too shallow for ocean ships, and so Yokohama, farther down the bay where the water is deep, has become its seaport. In 1923 Yokohama was almost entirely destroyed by a great earthquake, and Tokyo was partly destroyed. This was a terrible calamity for the Japanese; but they started at once to repair the damage, and both cities have now been rebuilt.


THE FAR EAST AND EAST INDIES
POLITICAL AND ECONOMIC MAP
Scale of statute miles
0 100 200 400 600 800
Capitals of countries
Chief seaports
Capitals of minor divisions
Navigable rivers
Principal canals
Principal railroads
Lowlands and interior plains
Old, worn-down mountains
Uplands and plateaus
Young, rugged mountains
AN=ANTIMONY C=COPPER T=TIN TU=TUNGSTEN
COTTON FROM INDIA, U.S., CHINA
IRON & STEEL GOODS, MACHINERY FROM EUROPE AND U.S.
RICE FROM INDIA, INDO-CHINA, SIAM
WOOLEN GOODS FROM GREAT BRITAIN
SOY BEANS, BEAN CAKE FROM CHINA
LUMBER AND MINERAL OILS FROM U.S.
SUGAR AND MINERAL OILS FROM D.E.I.
WOOL AND WHEAT FROM AUSTRALIA
COTTON GOODS FROM JAPAN, U.S.& GR.BR.
COTTON FROM U. S. AND INDIA
REFINED SUGAR FROM JAPAN
IRON & STEEL GOODS, MACHINERY FROM U. S. AND GR. BR.
RICE FROM INDO-CHINA AND SIAM
MINERAL OILS FROM U. S. AND D. E. I.
COTTON GOODS FROM GR. BRIT. & JAPAN
IRON & STEEL GOODS, MACHINERY, NETHERLANDS, GR. BRIT., & U.S.
AUTOMOBILES FROM U.S.
RICE FROM INDO-CHINA, SIAM, AND BURMA
SUGAR, RUBBER, COPRA, TEA, COFFEE AND MINERAL OIL TO NETHERLANDS, GREAT BRITAIN, AND OTHER EUROPEAN COUNTRIES
COTTON GOODS FROM JAPAN
IRON & STEEL GOODS FROM GR. BR.
RUBBER, TIN TO GREAT BRITAIN, U.S., NETHERLANDS
RICE TO CHINA AND JAPAN
COFFEE, TEA TO U.S.
MINERAL OILS TO JAPAN & CHINA
SUGAR TO INDIA
RAW SILK TO U.S. AND FRANCE
SILK, COCOONS TO GR. BR., INDIA AND AUSTRALIA
COTTON GOODS TO CHINA, INDIA AND D.E.I.
POTTERY AND TEA TO U.S.
SOY BEANS, BEAN CAKE AND COTTON TO JAPAN
RAW SILK TO U.S. AND FRANCE
TEA TO GR. BR. AND U.S.
RAW COTTON, SILK TO U.S. AND FRANCE
COTTON YARNS TO JAPAN
U. S. S. R.
MONGOLIA
CHINESE REPUBLIC
CHINA
MANCHURIA
CHOSEN
EMPIRE OF JAPAN
SIAM
FRENCH INDO-CHINA
BURMA
INDIA
BRITISH MALAYA
BRITISH NORTH BORNEO
BRUNEI (British)
SARAWAK
BORNEO
SUMATRA
JAVA
DUTCH EAST INDIES
PHILIPPINE ISLANDS (U.S.)
DUTCH NEW GUINEA
NEW GUINEA
SEA OF JAPAN
YELLOW SEA
EAST CHINA SEA
SOUTH CHINA SEA
PACIFIC OCEAN
SULU SEA
CELEBES SEA
BANDA SEA
ARAFURA SEA
JAVA SEA
Irkutsk
Lake Baikal
Chita
Kiakhta
Kosso L.
Selenga R.
Urga
Kerulen R.
Kulun L.
Argun R.
Blagovyeshchensk
Khabarovsk
Amur River
Tsitsihar
Sungari R.
Harbin
Kirin
Hanka L.
Vladivostok
Mukden
Newchwang
Antung
Kalgan
Peiping (Peking)
Paoting
Tientsin
Taiyuan
Tsinan
Weihaiwei (Brit.)
Kiaochow
Dairen (To Jap.)
Pingyang
Gensan
Keijo (Seoul)
Fusan
Lanchow
Sian
Yenchow
Kaifeng
Nanking
Chinkiang
Shanghai
Soochow
Hangchow
Hankow
Hanyang
Wuchang
Anking
Ichang
Chengtu
Chungking
Ningpo
Changsha
Nanchang
Wenchow
Funing
Foochow
Kweiyang
Yunnan
Kweilin
Liuchow
Wuchow
Changchow
Amoy
Canton
Macao (Port.)
Hong Kong (Br.)
Kwangchow (French)
Hainan
Hanoi
Taihoku
Tainan
TAIWAN (FORMOSA)
Formosa Strait
RYUKYU ISLANDS
BATAN IS.
BABUYAN IS.
Sakhalin
Gulf of Tartary
Otaru
Hokkaido
Hakodate
Aomori
Sendai
Honshu
Tokyo
Yokohama
Mt. Fuji 12,395
Nagoya
Kyoto
Kobe
Osaka
Hiroshima
Shikoku
Kyushu
Nagasaki
Kagoshima
Korea Strait
CHISHIMA OR KURIL IS.
COD
HERRING
ISLAND AND HERRING
LUMBER
COAL
WHEAT
SOY BEANS
SILK
COTTON
TEA
RICE
Lake Kara
Lake Koko
KUENLUN MTS.
YABLONOI MTS.
KHINGAN MTS.
Great Wall
Grand Canal
Hwang R.
Han R.
Yangtze R.
Yalung R.
Siang R.
Kan R.
Si R.
Mekong R.
Songka R.
Salween R.
Irrawaddy R.
Menam R.
Sadiya
Mandalay
Rangoon
Chiengmai
Bangkok
Korat
Hue
Binhdinh
Pnompenh
Saigon
C. Cambodia
Gulf of Siam
Gulf of Tongking
TROPIC OF CANCER
Penang I.
Malacca Str.
Malacca
Singapore (Br.)
Medan
Padang
Palembang
Banka I.
Billiton I.
Natuna Is.
Kuching
Pontianak
Samarinda
Sampit
Banjermasin
Brunei
Sandakan
Sunda Str.
Batavia
Surakarta
Surabaya
Madura I.
Sumbawa I.
Sumba I.
Flores I.
Timor I.
Wetar I.
Timor Laut Is.
Aru Is.
Ceram I.
Moluccas or Spice Is.
Halmahera or Jailolo I.
Sorong
Geelvink Bay
C. D'Urville
Torres Strait
Celebes
Strait of Macassar
Macassar
Menado
Molucca Passage
Talaut Is.
Sulu Archipelago
Palawan I.
Mindanao I.
Iloilo
Samar I.
Manila
Luzon I.
Pelew Islands (To Japan)
Yap I.
Caroline Islands (To Japan)
Marianas Islands (To Japan)
Guam (To U.S.)
EQUATOR
COPRA
SPICES
COCONUTS
SUGAR
RUBBER
Longitude East from Greenwich
100° 110° 120° 130° 140° 150°
10° 20° 30° 40° 50°
Constantinople
Cairo
Zanzibar
San Francisco
New Orleans
Mexico
Quito
A B C D E F G
1 2 3 4 5 6 7

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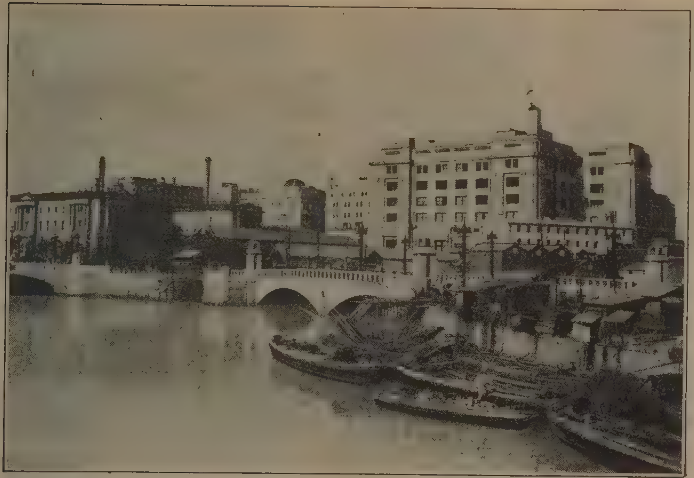


By Ewing Galloway, N.Y.

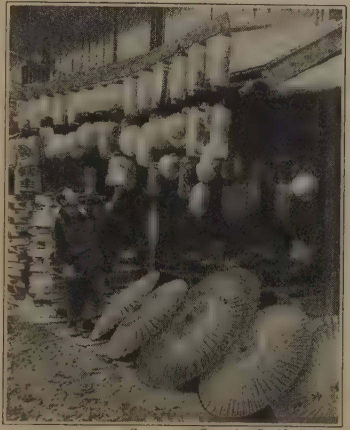
Figure 309. Some of the modern buildings in the business section of Tokyo. The large building at the right is a Japanese department store, and beyond it are two banks.

In rebuilding Tokyo the people have laid out broad streets and constructed modern stores, banks, business buildings, and government buildings, so that the new sections of the capital now resemble cities of western Europe and the United States. *See Figure 309.*

The older sections of Tokyo are very different, for they have the narrow streets lined with little one-story and two-story wooden buildings which are common in all Oriental cities. Opening wide on many of these streets are little shops where all kinds of Japanese goods are sold, and little workshops where Japanese craftsmen are busy making many articles of wood, paper, metal, and pottery such as we see in Japanese stores in this country. *See Figure 310.*

Like all the larger cities of Japan, Tokyo offers a strange and interesting mixture of Eastern and Western sights. Bicycles, rickshaws, oxcarts, electric cars, automobiles, carts drawn by horses, and carts pulled by men pass back and forth through the main streets. In the crowds on the sidewalks one may see Japanese business men, clerks, and students dressed as men in our country dress, and laborers wearing the scanty native working clothes. Among the women there are many who have adopted Western fashions of dress, and many others who still wear the long and beautiful kimonos with bright-colored sashes, which are their national costume. *See Figure 311.*

Business and manufacturing in Tokyo. Since Tokyo is the capital of Japan, it is the home of the emperor and the center of all the work of the government. It is also an important business and banking center, and has many manufacturing plants. Among the manufacturing industries the making of cotton goods, woolen goods, clothing, and paper, and the refining of sugar are especially important. Which one of these industries makes use of raw material produced in Japan? The others depend on imported raw materials. Study the



Courtesy of Canadian Pacific Railway

Figure 310. One of the many shops in Tokyo where paper umbrellas and Japanese lanterns are sold.

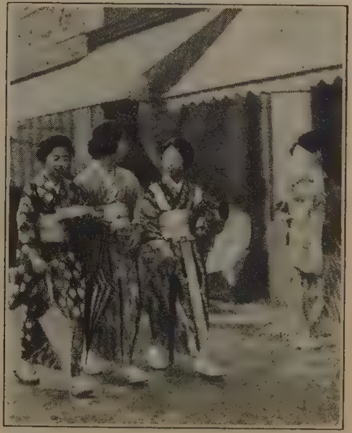


Figure 311. Some young Japanese women out shopping in their silk kimonos and their straw sandals.

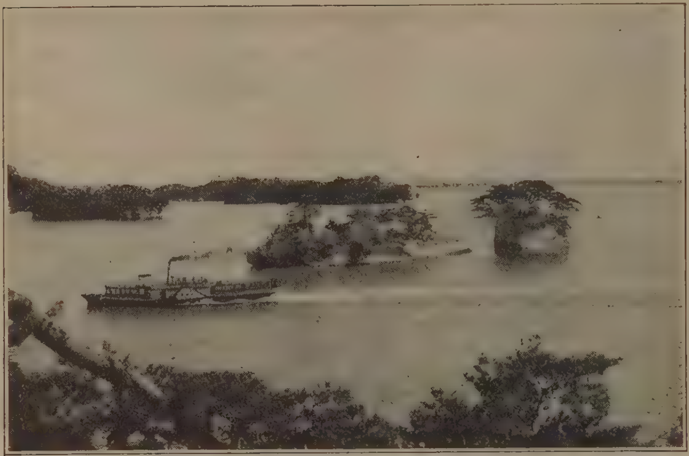


Figure 312. A small passenger boat on the Inland Sea of Japan. This beautiful body of water is about 240 miles long and from 8 to 40 miles wide, and it is deep enough for large ocean liners. Throughout its length it is dotted with rocky, wooded islands.

imports of Japan on the map on page 298, and tell where the raw materials come from.

Yokohama and its trade. Yokohama is the leading seaport of Japan, and the center of the great export trade in raw silk. The leading silk-producing region of Japan is in the part of Honshu west of Tokyo and Yokohama, and therefore Yokohama is the center where raw silk is collected for shipment to distant lands. As you would expect, many business companies dealing in silk have their headquarters there. Many other Japanese products are exported from Yokohama, but their importance is small in comparison with silk. All the silk is inspected before it is shipped away.

The imports of Yokohama are many and varied, and they include raw materials such as cotton and wool, foodstuffs such as wheat, rice, and raw sugar, and manufactured goods, especially machinery of various kinds. Large quantities of the imports go to Tokyo for use there and for distribution to other parts of the country. Some of the raw materials are used in Yokohama itself, for this city, like most other large seaports, is also a manufacturing center.

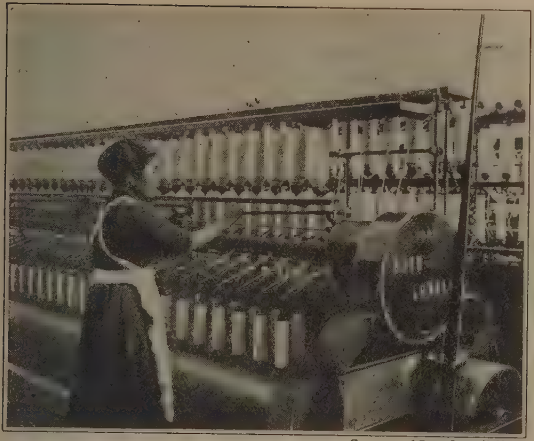
Nagoya and Kyoto. Southwest of the lowland in which Tokyo and Yokohama are located are two smaller lowlands, both of which are densely populated and open on bays. In one of these lowlands is the industrial city of Nagoya, which has modern cotton mills and is the leading center for the manufacture of pottery and porcelain in Japan.

In the other lowland is Kyoto, one of the most beautiful cities in Japan. For a thousand years, until 1868, Kyoto was the capital of Japan, and the great center of the art and culture of the country. The ancient palaces of the rulers of long ago contain many beautiful works of art, and the temples, shrines, and gardens in and near the city are known throughout the Orient for their beauty.

Kyoto is noted for its manufacture of silk goods. Some of this work is done in factories, but many of the finest products are woven and embroidered by hand. Kyoto is also the great center for the finest of the old-time industries of Japan: the making of delicate porcelains, beautiful lacquer and bronze wares, exquisite fans and dolls, and the beautiful copper and enamel ware known as cloisonné.

Osaka and Kobe. Turn to the map on page 298 and study the location of Osaka and Kobe (*E3*). Notice that they are at the northeastern end of the winding waterway which separates Honshu from Shikoku and Kyushu. This waterway is called the Inland Sea of Japan, and its mountainous shores and wooded islands make it one of the most beautiful bodies of water in the world. *See Figure 312.*

Osaka is the largest city and the greatest manufacturing center of Japan. People call it "the Manchester of Japan" and also "the Pittsburgh of Japan." As these names sug-



Courtesy of Saco-Lowell Shops

Figure 313. A Japanese girl tending a machine in a cotton-spinning mill in Osaka. The machine was manufactured in one of our New England cities.

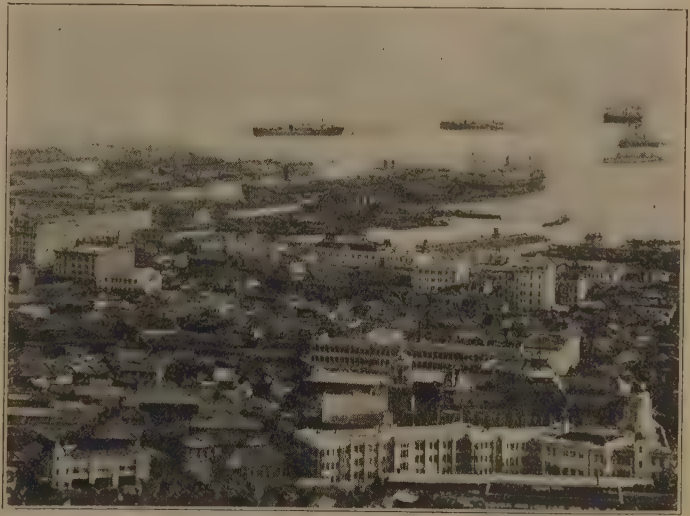
gest, it is the leading cotton-manufacturing city of the country, and the leading center for the manufacture of iron, steel, and all kinds of iron and steel products, varying in size and value from locomotives and ships to wire and nails. Coal for its industrial plants comes from Kyushu, iron ore for its blast furnaces from China and Chosen, and cotton for its cotton mills from India, the United States, and China. *See Figure 313.*

Osaka is also an important seaport, but not so important as Kobe because its harbor is too shallow for the larger ocean ships. Kobe is fortunate in having a deep harbor, and the people have constructed modern docks and wharves, with all the necessary machinery for loading and unloading ships. In the business section of the city there are many large office buildings, and most of the business firms interested in Japanese foreign trade have headquarters or branch offices there. *See Figure 314.*

Nagasaki. Although most of Japan's foreign trade is carried on through the three ports of Yokohama, Kobe, and Osaka, there are a number of smaller seaports. Among them is Nagasaki, which is well known to ship captains as a coaling station. Find Nagasaki on the map on page 298 (*D3*). What reason can you give for its importance in supplying ships with coal? There is also a large shipyard at Nagasaki, where many ships for the Japanese navy and the Japanese merchant fleet are built.

Japanese railroads. One of the indications of modern progress in Japan are the many miles of railroads which have been built. Government railroads connect all the more important cities with one another, and railroads built by private companies reach many of the smaller places.

A summary of manufacturing. Fifty or sixty years ago there were very few factories in Japan, and nearly all the manufacturing was done by hand in the homes of the people and in small workshops. The Japanese had become



Courtesy of Admiral Oriental Line

Figure 314. A view of part of the business section and harbor of the Japanese port of Kobe. This city is a center for steamship lines which run to all parts of Japan and to distant parts of the world. It is also an important railroad center.

very skillful hand-workers, but they knew little or nothing of machine-manufacturing.

After the Japanese came in touch with Europe and the United States through trade, they saw that their country could make great progress by adopting Western methods of manufacturing. The government sent officials to the countries of western Europe and to the United States to study manufacturing methods, and in time factories were built and equipped with machinery purchased in those countries. From the very beginning Japan has made steady progress in manufacturing. Its chief advantages for this work are its coal and water power, and its large and industrious population, which not only supplies abundant workers, but also provides large home markets for manufactured goods.

Today the principal factory industries of Japan are the making of cotton, silk, and woolen goods, the manufacture of paper and matches, and the making of china and other kinds of pottery. Among the textile industries, which ones depend on imports of raw materials?

Japanese trade. Turn to the map on page 298 and prove by the imports that as yet Japan does not fully supply its own needs for woolen goods and for iron and steel products. Prove by the exports that Japan manufactures a surplus of cotton and silk goods.

As you already know, by far the most valuable of Japan's exports is raw silk, which comes from the farms of the country. Cotton goods rank second and silk goods third. The export of manufactured goods is a recent development in Japanese trade, and shows that Japan is becoming more and more of a manufacturing country.

Among the imports of Japan, cotton, wool, iron and steel, and other raw materials have the highest value,— another proof of the importance of manufacturing. The Japanese also import certain manufactured products such as machinery, which they do not as yet produce in sufficient quantities to supply their needs, and certain foodstuffs, especially raw sugar, wheat, and rice.

About 40 per cent of the exports of Japan, by value, go to the United States, chiefly because our country takes such a large proportion of Japanese silk. The next largest share goes to China, and the third largest to India, for those countries are the best customers for Japanese cotton goods.

In the import trade the United States holds first place, followed by India and China, for these three countries supply most of the raw cotton for the mills of Japan. Then comes Great Britain, which supplies Japan with many of its imports of manufactured goods.

Some things to explain. Explain why

1. The Japanese are one of the great fishing nations of the world.
2. The forests of Japan are a valuable resource.
3. Japan is well supplied with means of obtaining power for manufacturing.
4. Japan has plenty of workers for its mills and factories, and a large home market for manufactured goods.
5. The United States holds first place in the export and import trade of Japan.
6. India and China rank high in the export and import trade of Japan.
7. Yokohama is the leading seaport of Japan.
8. Osaka is called "the Manchester of Japan" and "the Pittsburgh of Japan."

3. CHOSEN AND TAIWAN

The island of Taiwan, or Formosa, has been part of the Japanese Empire since 1895, and the peninsula of Chosen, or Korea, since 1910. Taiwan formerly belonged to China, and the people there are largely Chinese. Chosen is the home of the Mongolian people known as Koreans, but there are also many Chinese and Japanese living in the peninsula. As you study Chosen and Taiwan, find out why they are valuable to the Japanese people.

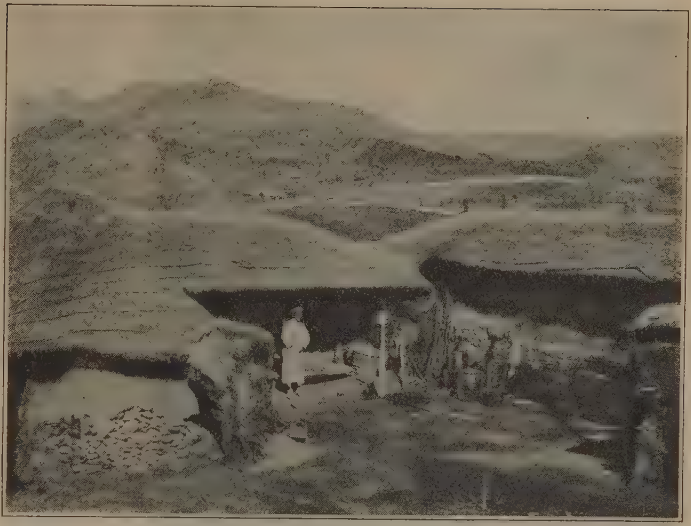


Figure 315. A Korean farmer and his home. What reason can you give for the fact that the Korean farmers seldom have difficulty in finding markets for the products which they raise?

Chosen (Korea). Like Japan proper, Chosen is mountainous, yet most of the people are farmers. Chosen, however, is less densely populated than most parts of Japan proper, and thus the people have a surplus of farm products which are exported chiefly to Honshu. Among these surplus farm products are rice, soy beans, large quantities of raw silk, and a considerable quantity of cotton. Soy beans are valuable oilseeds. The beans are pressed to obtain the oil, and the "cake" that is left makes excellent fertilizer. In Japan, where animal fats are scarce, bean oil is in great demand for cooking purposes. Explain why the people of Japan proper need fertilizers.

Chosen has coal and valuable deposits of iron, copper, and other metal ores. Since the Japanese have been in control of the peninsula, coal and iron mines have been opened, blast furnaces have been built, and pig iron is exported to Honshu.

It is clear, then, that Chosen is playing an important part in helping to supply the people of Japan proper with foodstuffs and with raw materials. Nine tenths of all the exports of the peninsula go to Japan, and most of the goods which the Koreans obtain from outside their own country are purchased from the Japanese. *See Figure 315.*

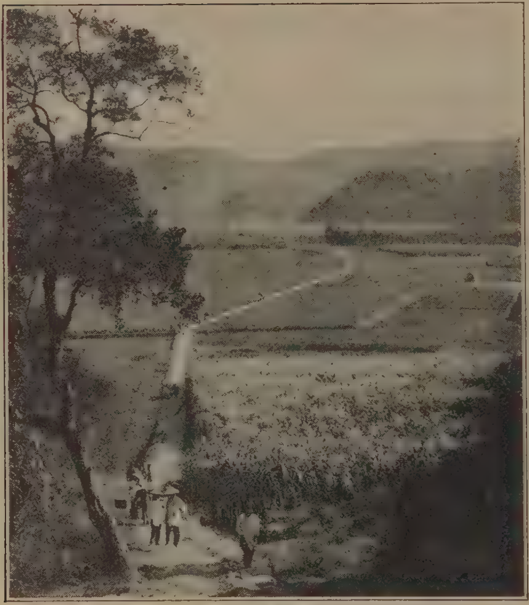
The largest city of Chosen is its capital, Keijo, which is often called by its Korean name, Seoul. From Keijo one may travel by train to Fusan, the chief seaport. Find Keijo and Fusan on the map on page 298 (*D3*). Why is Fusan well located for trade with Japan proper?

Dairen. Northwest of Chosen is the part of China known as Manchuria, and there, at the tip of a mountainous peninsula, the Japanese have developed the modern port of Dairen on land leased from the Chinese. A little farther north in Manchuria the Japanese own iron mines and blast furnaces, and from Dairen pig iron is shipped to Honshu. Find Dairen on the map on page 298 (*D3*), and notice the railroad that runs northward from there, joining the Trans-Siberian Railroad. This railroad of Manchuria is partly controlled by the Japanese.

Taiwan (Formosa). Because of its location, Taiwan is a tropical island, and can therefore produce many crops for which the climate of Japan proper is too cool. Among these crops the most valuable is sugar cane, and large quantities of raw sugar are exported to Japan. *See Figure 316.*

Taiwan also helps to supply the Japanese people with rice, tea, and tropical fruits, especially bananas. Coal is mined in the island, and this too is exported to Japan.

The products of Taiwan best known in the United States are tea and camphor. The tea is the kind known as oolong, and it is sold in most of our grocery stores. Camphor is a



By Burton Holmes from Ewing Galloway, N.Y.

Figure 316. A sugar plantation in Taiwan (Formosa). The Japanese have started many sugar plantations in this tropical island. Can you explain why?

whitish, oily substance obtained by heating chips of the wood of the camphor tree in steam over boiling water. Camphor trees grow wild in Taiwan, and this island alone supplies about half of all the camphor produced in the world. *See Figure 317.*

The Japanese have done much to develop the resources of this valuable island. They have sent groups of colonists there, built roads and railroads, opened schools, planted large numbers of camphor trees to take the place of those which have been cut down, and improved the methods of raising sugar cane and other crops.

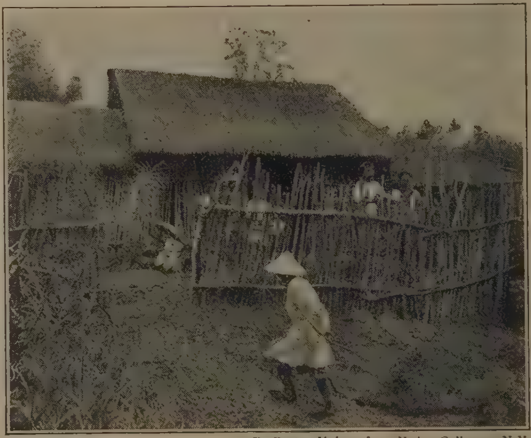
Japanese islands in the Pacific Ocean. On the map on page 298 find the groups of small islands in the Pacific Ocean which belong to Japan (*F 5* and *E–F 6*). Before the World War these tropical islands were German possessions, but at the end of the war they were placed under the protection of Japan. Their chief export product is copra.

JAPAN AND GREAT BRITAIN
A COMPARISON

At the beginning of your study of Japan you were asked to find out why it is said that this Far Eastern country is becoming "the Britain of the Orient." You know now that it is because Japan, like Great Britain, has taken advantage of its location and resources to develop manufacturing and foreign trade.

Turn back to page 41 and read over the list of advantages for the growth of manufacturing in Great Britain. As you do so, tell whether or not Japan has the same advantages. When you have finished, answer the following questions:

1. Why did the Japanese, like the British, long ago begin to make use of the sea?
2. Why were both nations well prepared to engage in foreign trade when such trade became necessary?
3. Why do both nations import large quantities of raw cotton today?
4. Why are raw materials the leading imports of both Great Britain and Japan?
5. In Great Britain foodstuffs rank next to raw materials among the imports. In Japan manufactured goods hold second place. What explanation can you give for this difference?



By Burton Holmes from Ewing Galloway, N.Y.

Figure 317. A native house in Taiwan. The people who live in this house get their living by cutting camphor wood and extracting the camphor from it.

6. In Great Britain manufactured goods are by far the most valuable exports. In Japan the exports of raw silk are worth more than all the exports of manufactured goods combined. What reasons can you give for this difference?

7. In Japan, as in Great Britain, the population has increased greatly since manufacturing became important. If, as time goes on, manufacturing continues to increase, in what ways will Japan's foreign trade probably become more like Great Britain's?

8. Why have both Japan and Great Britain large home markets for manufactured goods?

Making choices. Choose the word or phrase which makes each sentence below correct.

1. The leading food crop grown in Japan is
wheat. millet. [✓ rice.]

2. The Japanese farmers produce much
raw cotton. [✓ raw silk.] raw wool.

3. The most valuable mineral resource of Japan is
petroleum. [✓ coal.] iron ore.

4. The most valuable metal ore mined in Japan is
[✓ copper.] iron ore. gold.

5. The most valuable export product of Japan is
tea. raw silk. pottery.

6. The most valuable imports of Japan are
manufactured goods. [✓ raw materials.] foodstuffs.

7. The country which buys the greatest quantities of raw silk from Japan is
[✓ the United States.] France. Great Britain.

8. The country which holds first place in supplying Japan with imports is
China. [✓ the United States.] India.

Giving reasons. Complete each sentence below by giving reasons.

1. Many of the people of Japan are very poor because ---------------------------.

2. Although Japan is one of the great rice-growing countries, the people import rice from other parts of the Far East because ---------.

3. It is fortunate for the Japanese that the waters bordering their homeland are rich in fish because ---------------------------------.

4. There are forests in many parts of Japan because ---------------------------------.

5. Many of the forested lands will never be cleared for farming because ----------------.

6. Japan has many swift-flowing rivers because ---------------------------------------.

7. The rivers are of great value to the people because ---------------------------------.

Naming cities. Name each city of Japan described below and answer the questions about it.

1. The capital of Japan. Why is it not a seaport? Why is it a manufacturing center?

2. The leading seaport of Japan. Why is it the chief center for the export of raw silk from Japan?

3. The largest city of Japan. For what manufacturing industries is it noted? What advantages has it for obtaining raw materials and fuel for its industrial plants, and for marketing manufactured goods?

4. The most important seaport on the Inland Sea of Japan. Why is it a more important port than Osaka? Why do many foreign business firms have offices in this city?

5. An important coaling station for ships on the island of Kyushu. What kind of manufacturing is carried on at this port?

Some things to explain. 1. Explain why the Japanese lived by themselves for so many centuries, and how they finally came to take part in the trade of the world.

2. Give as many reasons as you can to explain why the people of the United States are interested in the industrial and commercial development of Japan.

3. Explain how it is possible for so many millions of people to make a living in the mountainous islands of Japan.

4. Explain why it has been of advantage to Japan to obtain control of the peninsula of Chosen (Korea).

5. Explain why the Japanese are interested in developing the resources of the island of Taiwan (Formosa).

III. THE CHINESE REPUBLIC

1. Foreword

A very old nation. The Chinese are one of the oldest of the civilized nations of the world. For many centuries they were governed by emperors, and their lands formed the Chinese Empire. In 1912 the empire was overthrown, and the Chinese Republic took its place.

Among all the countries of the world the Chinese Republic is the second largest in area. The Soviet Union is first, and after the Chinese Republic come Canada, Brazil, and the United States without Alaska. The Chinese have never taken a careful census, or count, of their population, but it is estimated that there are about four hundred and forty million people in the country. This is the largest number of people in any one country in the world.

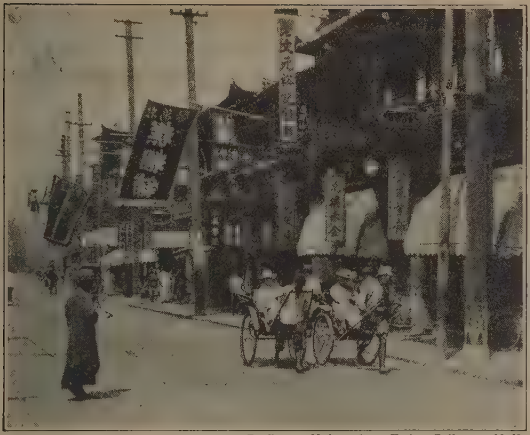
The Chinese have always been a nation chiefly of farmers, and for thousands of years they lived so much by themselves that they knew little of what was going on in the rest of the world. Nevertheless, they made remarkable inventions and discoveries, and many of them became skillful craftsmen, talented artists, and great scholars. They were civilized people when only savage tribes occupied western Europe and America.

A land of contrasts. Today China, like Japan, is a land of marked contrasts, where Eastern and Western civilizations are mixing, and the new and the old are found side by side. In the country districts millions of farmers live and work almost as simply as their forefathers did thousands of years ago, but in the cities the contrasts between the old and the new are very noticeable. Goods are transported in all kinds of vehicles, from wheelbarrows to modern motor trucks; people ride from place to place in rickshaws, taxicabs, and electric cars; skilled craftsmen work by hand in tiny shops, and factory workers tend machines in modern manufacturing plants. *See Figures 318 and 319.*

As you study the Chinese Republic, try to find out (1) why the people lived apart from the rest of the world so long; (2) how so many people can make a living in the country; (3) why farming has always been more important than manufacturing and commerce in China; and (4) why such rapid changes are taking place in the country today.

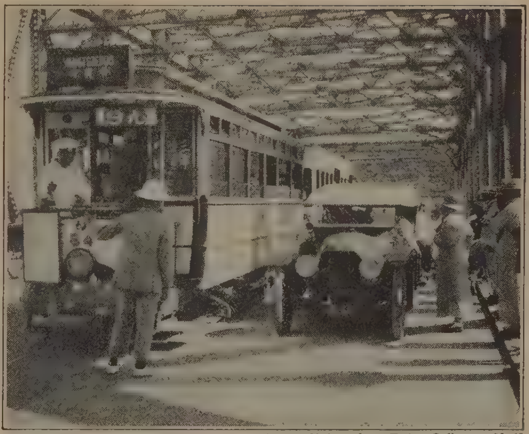
Political divisions of the republic. The Chinese Republic is made up of four principal political divisions. The eastern, and most important, division is China, or China proper, as it is often called to distinguish it from the rest of the country. China proper borders the Pacific Ocean and includes the section in the north known as Manchuria. In the interior are Mongolia, Sinkiang, and Tibet. Find these four main political divisions on the map on page 295.

Map studies. 1. On the map on page 70 find the following regions of the interior of the Chinese Republic, and give their elevations: (1) Plateau of Mongolia; (2) Zungarian Basin; (3) Plateau of East Turkestan; and (4) Plateau of Tibet. 2. Which one of these regions is much higher than the others? 3. How do their elevations compare with the elevations of the surrounding mountains? 4. Now locate these interior plateaus on the map on page 68. 5. What can you say about their vegetation? 6. What explanation for their vegetation is suggested by Figure 64 (p. 71)? 7. On the map on page 70 locate (1) the Manchurian Lowlands; (2) the Plain of China; (3) the Szechwan Basin; and (4) the East China Highlands. These regions are in China proper. 8. What does Figure 64 show about their rainfall? 9. How do you expect their vegetation to differ from that of the interior plateaus? Check your answer by the map on page 68. 10. What does Figure 65 show about the number of people in China proper compared with the number in the interior plateaus?



By Burton Holmes from Ewing Galloway, N. Y.

Figure 318. A shopping street in the Chinese port of Shanghai. Notice the rickshaws. They are used in Chinese cities as taxicabs are used in our cities.



By Burton Holmes from Ewing Galloway, N. Y.

Figure 319. Modern means of transportation in Shanghai. The traffic policeman is stopping an automobile so that passengers may get onto the electric car.

The uneven distribution of population. You have discovered from the maps that the interior of the Chinese Republic is very thinly populated, while China proper is crowded with people. In fact, as Figure 3 on page 4 shows, China proper is one of the most densely populated parts of the whole world. It makes up less than half the area of the republic, yet it has 98 per cent of all the people. What reasons can you suggest for the fact that most of the Chinese people live in China proper? Check your answer to this question as you learn more about the Chinese and their country.

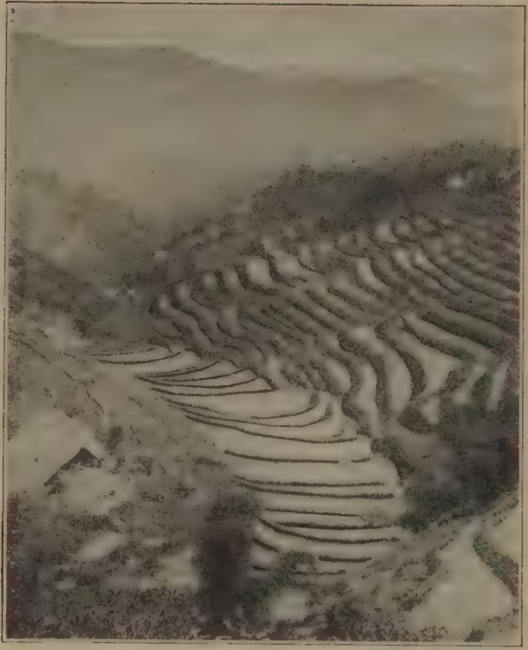
Differences in surface. The maps have shown you that there are great differences in surface within the Chinese Republic. The interior is made up of plateaus surrounded by high, rugged mountains, while the eastern portion, bordering the coast, is made up of lowland plains and of mountains much lower than those of the interior. As you would expect, it is the lowland plains that are most crowded with people.

Differences in climate. Turn to the map on page 295 and notice that most of the Chinese Republic lies between the parallels of 20° and 50° north latitude. Thus it extends a little farther north than the United States does, and considerably farther south. As you would expect, then, there are very noticeable differences in the temperatures in the northern and southern parts of the country. In the north the poorer people often suffer greatly from the cold in the winter, while in the south the winter weather is never severe.

You have already noted the differences in rainfall in the republic. The interior has less than 20 inches of rain a year, and parts of it are so dry that they are deserts. Nearly all of China proper, on the other hand, has over 20 inches of rain a year, and much of it has between 40 and 80 inches.

The monsoon winds. The winds which bring most of the rain to China are the summer monsoons. They blow toward the interior of the great continent of Asia during the warmer part of the year, heavily laden with moisture from the Pacific and Indian oceans. The summer monsoons from the Pacific Ocean give China heavy rainfall in summer, just as those from the Indian Ocean give India heavy rainfall at the same season.

Since the interior of the Chinese Republic is bordered by high mountains on the south



By Ewing Galloway, N.Y.

Figure 320. Terraced rice fields in the East China Highlands. Each terrace, or step, is leveled off, and the soil is kept from washing away by a wall of earth. Hills and mountain slopes are terraced in all the rougher parts of southeastern China.

and east, little of the moisture brought by the summer monsoons reaches that part of the country. That is why the interior plateaus have so little rain, and the lack of sufficient rainfall for farming is the chief reason why those regions have so few people.

During the colder part of the year the winter monsoons blow outward from the dry interior of Asia, and therefore China, like India, has much less rain in winter than in summer. Northern China has bitterly cold winter winds from Siberia, which sometimes bring great clouds of dust with them. These cold dust storms are exceedingly unpleasant. In southern China the winter winds from the interior are cool, but that part of the country is so far south that the warmth of the sun makes the winter climate mild. In summer the weather in southern China is hot.

Giving reasons. Sum up some of the facts which you have learned thus far about the Chinese Republic by giving reasons to complete the following sentences:

1. China proper is much more densely populated than the interior plateaus because ______ ____.
2. China proper has sufficient rain for agriculture because ____________________________.
3. Much more of the rain comes in summer than in winter because ____________________.
4. The interior plateaus suffer from too little rainfall because ___________________________.

2. China Proper

For purposes of study it is helpful to divide China proper into four sections: (1) south China, which includes the lowland of the Si River; (2) middle China, which includes the lowlands bordering the Yangtze River; (3) north China, made up largely of the lowland known as the Plain of China; and (4) Manchuria, made up largely of the Manchurian Lowlands.

China proper is not quite two thirds as large as the United States, yet it has more than three and a half times as many people. Judging from the map on page 298, how do you think most of the people make their living? What products of China remind you of Japan? What mineral resources important in manufacturing has China? How well supplied with railroads does the country seem to be?

A land of farmers. Except in Manchuria, the lowlands of China are so densely populated that almost every acre of land which can be cultivated and which is not used for buildings or roads produces crops, chiefly foodstuffs for the millions of people. At least four fifths of all the people make their living by farming, yet nine tenths of the farms are less than two acres in size; and if a farmer has as many as five acres, he is considered well-to-do.

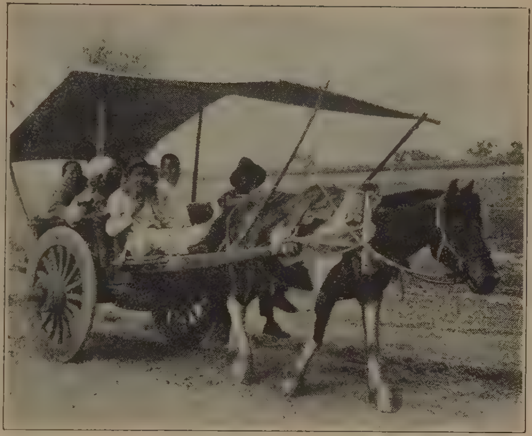
The Chinese farmers cultivate their little patches of land with the greatest care, for every square foot must be made to produce as much as it possibly can. Plowing is done with the help of oxen in the north and water buffaloes in the south, but the rest of the farm work is done by hand. In some places even the plows are pulled by men instead of by animals, for there are so many people in China that human labor is very cheap.

The better farm lands are, of course, in the lowlands, but the Chinese also terrace the hillsides and the mountain slopes for crops. Building terraces and keeping them in repair is hard work, but only by cultivating the hillsides and mountain slopes as well as the level lands can so many people manage to make a living by farming; and even so, most of the farmers are very poor. *See Figure 320.*

Except in Manchuria, almost no land in China proper is used for pasture. The Chinese, like the Japanese, cannot afford to keep many cattle or sheep, because as much land as possible must be used to raise food crops, and little can be spared for pasture or forage crops. Pigs, chickens, and ducks are abundant, however, for they can be fed more cheaply than cattle or sheep.

Mineral wealth. China is a land of much mineral wealth. It has abundant coal and good supplies of iron and other metal ores. With these mineral resources it is well prepared to carry on manufacturing, but as yet its industrial growth has been slow. That is chiefly because the Chinese have only recently begun to realize how much their country would benefit by the development of manufacturing. As you visit the different parts of China, you will see modern industrial plants here and there; but you will find that the greater part of the manufacturing is still done by hand in small workshops and in the homes of the people.

Means of transportation. The map shows that China is not well supplied with railroads. Altogether, there are less than 9000 miles of railroads in this great country — less than one twenty-seventh the number of miles of railroads in the United States. Furthermore, most of the roads are so poor that transportation by automobile and motor truck is difficult, and in many parts of the country, impossible. In many sections wheelbarrows and pack donkeys are the chief means of transportation, while in others the roads are good enough for slow-moving carts. *See Figure 321.*



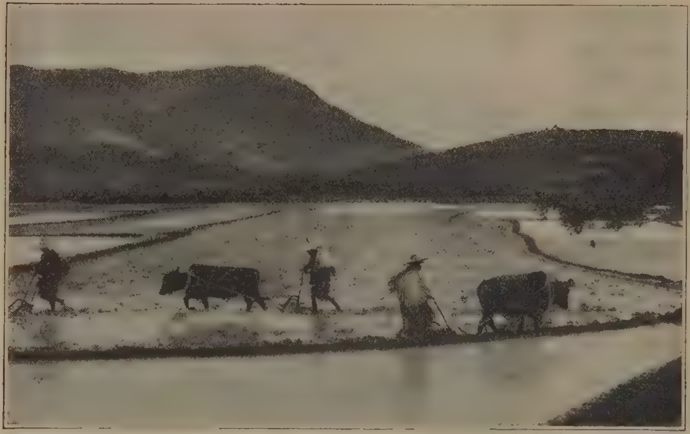
By Ewing Galloway, N. Y.

Figure 321. A Chinese cart of the kind comonly used in the northern part of China. Only a well-to-do Chinese farmer can afford to own a horse and cart.

Fortunately, China has several long rivers which are navigable for good-sized boats, and in the eastern lowlands many canals have been built. But, as you know, transportation by boat is slow at best, and a country with few railroads and poor roads cannot make the best use of its resources.

Some things to explain. Give an explanation for each of the following facts:

1. Chinese farms are very small.
2. Chinese farmers do most of their work by hand.
3. The Chinese terrace hillsides which otherwise would be too steep for farming.
4. Compared with most farming countries, China has few cattle or sheep.
5. Transportation is slow in most parts of China.
6. Labor is cheap in China.



By De Cou from Ewing Galloway

Figure 322. Farmers plowing a rice field in south China. They are using water buffaloes to draw their plows. In what possession of the United States do the farmers use water buffaloes?

South China and Middle China

Mountains and plains. The map shows that much of south China and parts of middle China are mountainous. The mountains are not very high, however, and the people terrace many of the slopes for farming. The larger rivers are bordered by extensive lowland plains, all of which are overcrowded with people.

South China, as you know, has hot summers and mild winters, and even in middle China the winters are usually mild. For this reason most of the farmers of south China and middle China get at least two crops a year from their land.

Rice, silk, and tea. You may think of these two sections of China as lands of rice, silk, and tea, for rice and tea are the most valuable crops, and mulberry trees, both wild and cultivated, provide leaves to feed millions of silkworms. Tea bushes cover the hillsides in many places, and rice is grown in the lowlands and also on terraces on the hillsides. *See Figure 322.*

In all but the northern part of China proper, rice is the chief food of the people just as it is in Japan, and for the same reasons. Can you give the reasons? If not, review what you learned on page 291.

The Chinese cultivate their rice fields with the same painstaking care that the Japanese do, and they produce more rice than any other nation in the world. Nevertheless, the population is so large that additional supplies of rice are imported from Indo-China and Siam.

The production of raw silk is carried on in China in much the same way as in Japan, except that there are fewer filatures and much more of the reeling of the cocoons is done by hand in the farmers' homes. In China, as in Japan, raw silk is the leading export.

The Chinese, like the Japanese, are tea-drinkers, which accounts for the fact that tea is one of their leading crops. In addition to all the tea used within the country, there is a large surplus for export. The better qualities of tea are sent chiefly to England and European Russia, while the poorer qualities are sold to the people in the interior regions of the Chinese Republic.

The lowland of the Si River. By far the most important part of south China is the densely populated valley and delta of the Si River. Find this lowland plain on the map on page 298 (*C4*). What Chinese seaport is at the mouth of one of the distributaries of the Si? What British port is located on an island beyond the delta?

This warm, moist lowland, with its subtropical climate, produces a great variety of crops, but rice and sugar cane are by far the most important. It is also one of the most important Chinese centers for the production of raw silk, for mulberry trees are abundant, and many of the farmers raise silkworms.

Canton. Canton, the largest city of south China, is so overcrowded that more than one tenth of all the people live on the river in boats. Thousands of children are born and brought up on these boats, and never have any other place to live. When they are old enough to crawl about, their mothers put ropes around them and tie them to the boats to prevent their falling overboard. In some of the families both parents go ashore each day to work. Other boat families make their living by carrying goods from one place to another. *See Figure 323.*

Along the streets bordering the river in Canton there are modern buildings, several stories high, which are used as department stores, banks, business offices, and warehouses. If you were to visit the warehouses, you would find some of them filled with Chinese goods for export, and you would notice especially the beautiful silk goods and silk embroideries. Canton is a great center for the reeling of silk, the weaving of silk goods, and the making of silk embroideries, shawls, and scarfs. Can you explain why?

Away from the water front and the chief business section of the city, most of the streets of Canton are narrow lanes bordered by little one-story houses, shops, and workshops built as close together as possible. In many of the homes, as well as the workshops, people are busy weaving and embroidering, carving ivory, stone, and wood, and making jewelry, fans, lanterns, toys, and many other articles such as we see in Chinese stores in our country. There are several modern cotton mills and a few other factories in Canton, but most of the manufacturing is done by hand in the small workshops and in the homes. *See Figure 324.*

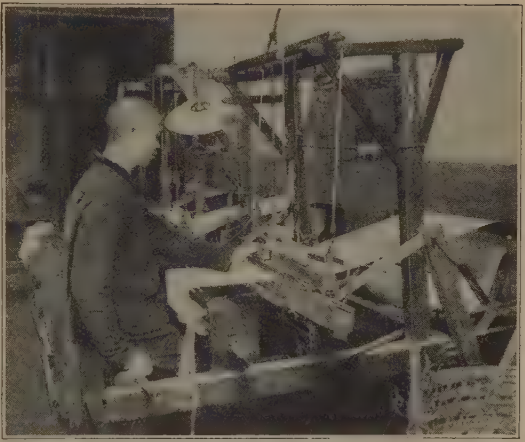
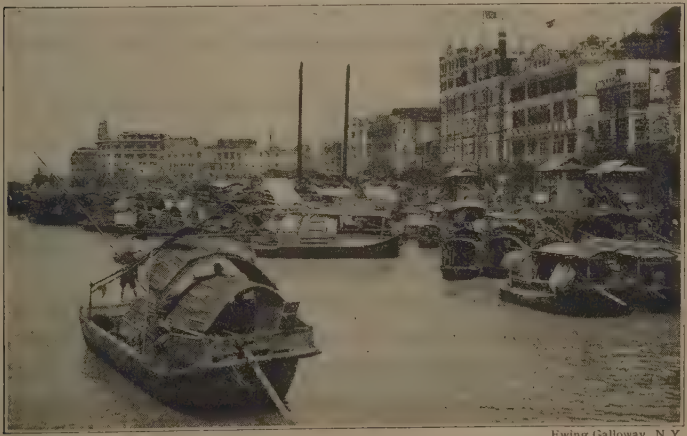


Figure 324. A Chinese workman weaving cotton cloth on a hand loom in a workshop in Canton. Why are large quantities of cotton cloth needed in China?



Ewing Galloway, N.Y.

Figure 323. A glimpse of the water front at Canton, showing some of the sampans, or small boats, in which so many of the people live. Most of the families who live in boats are very poor.

The trade of Canton. Canton is the leading commercial center of south China and the chief port of that part of the country. Large ocean ships cannot come to its wharves, however, because the harbor is not deep enough. For this reason the goods for export are sent in small boats to the British port of Hong Kong, 78 miles away, and loaded on ocean-going ships there. Coming back to Canton, the small boats bring imported goods which have been unloaded from the ocean ships at

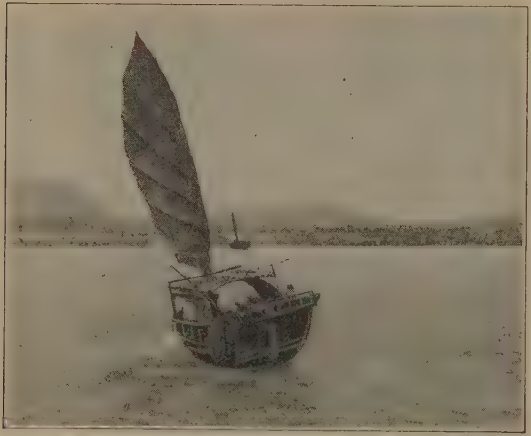


Figure 325. A small Chinese junk on the Yangtze River. Junks are important cargo boats in China, and many of them are much larger than this one.

Hong Kong. From the map on page 298 name the leading exports of Canton. Why is it natural that these products should be shipped from south China to distant lands? Among the imports of Canton rice and cotton are important. Explain why.

The Szechwan Basin. Flowing from west to east through middle China is the Yangtze River. In its middle course it flows through the densely populated Szechwan Basin, a mountain-rimmed plain which is often called the Red Basin because of its red soils. These soils are very fertile, and the climate of the basin is mild and the growing season long. For these reasons it is one of the best farming regions in China, and the farmers raise a great variety of crops: rice, wheat, tea, cotton, sugar cane, and many others. Raw silk is also a very important product of the basin.

Down the Yangtze. Turn to the map on page 298 and trace the Yangtze downstream from Chungking (*B4*), the largest city of the Szechwan Basin. Notice that the river is navigable from some distance above Chungking all the way to the sea. What great seaport is located near its mouth?

There are no east-west railroads in this part of China, and therefore the Yangtze is the chief highway of travel and transportation between the Szechwan Basin and the sea. Chinese junks, such as you see in Figure 325, and river steamers carry passengers and all kinds of goods up and down the Yangtze between the cities and towns along its banks.

East of the Szechwan Basin the Yangtze flows through another plain almost inclosed by mountains, and then winds across the great delta which it has built out into the East China Sea. Like the Szechwan Basin, these plains are rich farming regions and are densely populated. Rice and wheat are the chief grain crops, tea is grown on the inner plain, and large quantities of raw silk are produced on the delta. These lowlands bordering the Yangtze are also the chief cotton-growing regions of China. China stands next to the United States and India in the production of cotton.

An industrial center. On the map on page 298 find the cities of Hankow, Hanyang, and Wuchang (*C3*). Together these cities have more than a million people, and they form one of the few modern industrial centers in China. Among their manufacturing plants are cotton mills, silk filatures, flour mills, and the iron-and-steel plant shown in Figure 326. The iron ore for this plant comes from mines a little farther south.

At Hankow you will find a plant for refining antimony, which is mined in the East China Highlands. Antimony is a cheap white metal which will not tarnish. It is used in making type metal, pewter, and certain other alloys, or mixtures, of metals.

Turn to the map on page 298 and find the place where the antimony is mined. Notice that there are tungsten mines in the same section of the mountains. China produces about three fourths of the world's supply of antimony, and about half the world's supply of tungsten. Tungsten is used chiefly as an

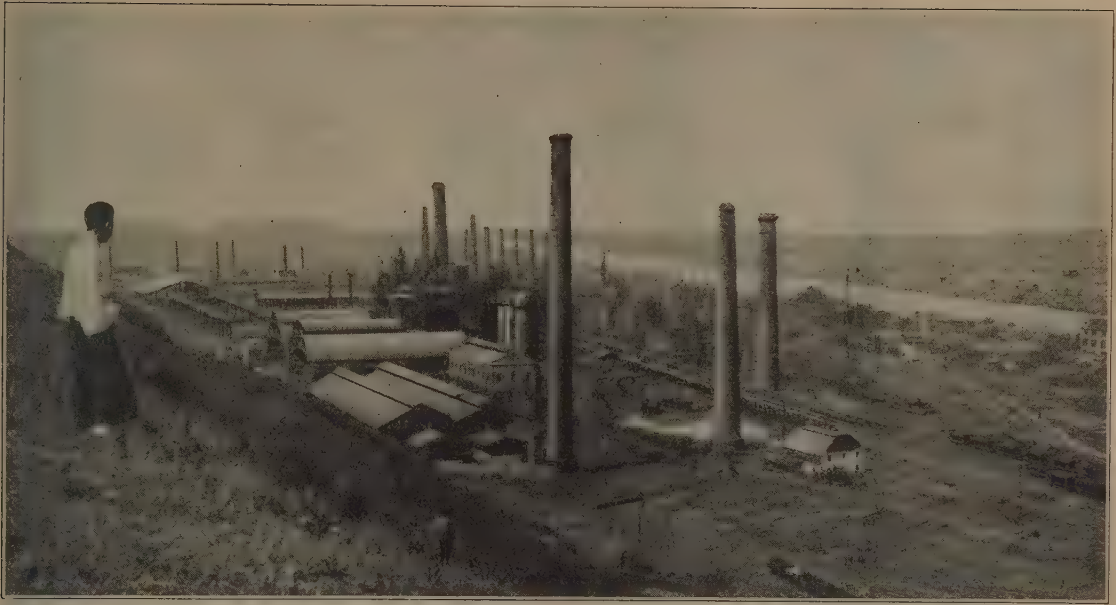


Figure 326. A view of the iron-and-steel plant at Hanyang. Many of the industrial plants in China have been established by foreign manufacturing companies, but these iron-and-steel works at Hanyang belong to a Chinese company. On the map on page 298 find the place where the iron ore for this plant is mined.

alloy in making certain kinds of very hard steel. It is also used in making the filaments, or fine wires, in electric-light bulbs.

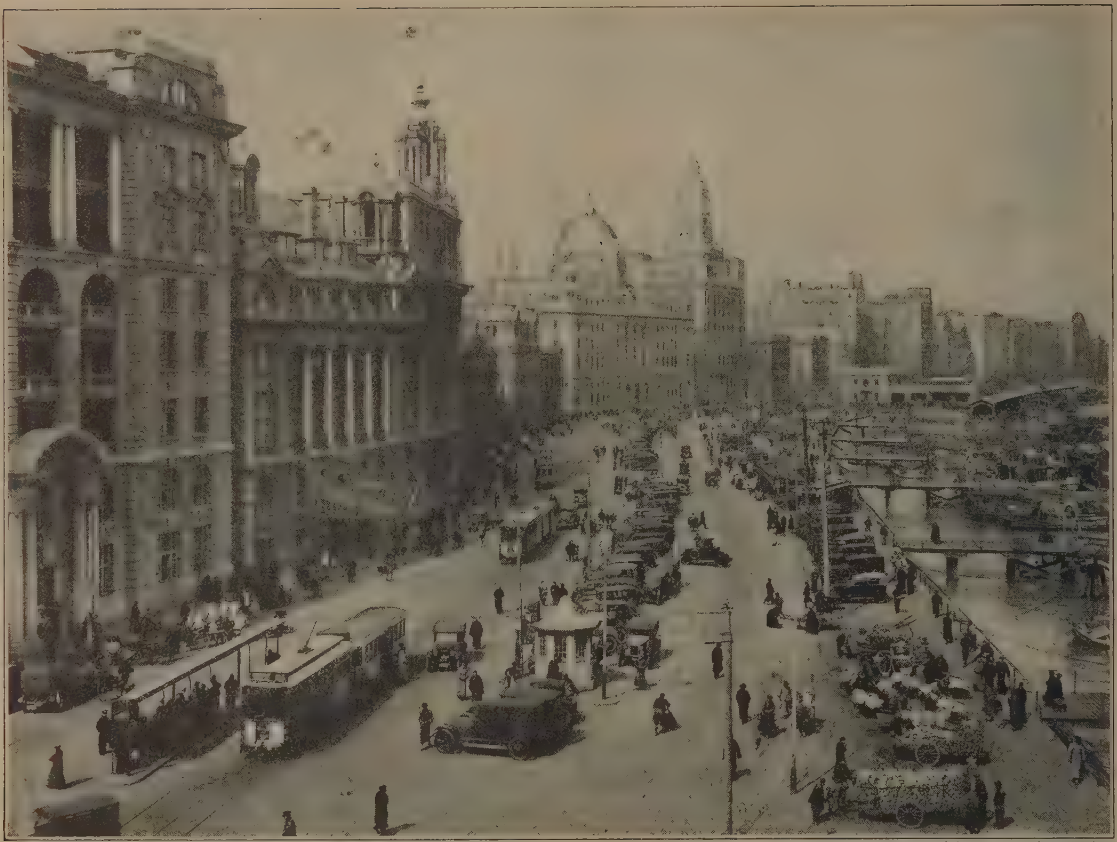
The capital of the republic. Farther down the Yangtze is the old city of Nanking, which became the capital of the Chinese Republic in 1928. For many centuries Peking (now called Peiping) was the capital of the Chinese Empire, and from 1912 to 1928 it was capital of the republic. Now that the capital has been changed to Nanking, this city is the center of government. It is also a commercial center, where many foreign companies which carry on business in China have offices.

Shanghai. On the map on page 298 find the city of Shanghai (*D3*). Shanghai has about a million and a half people and is the largest city and the leading seaport of China. It is located on a small stream which flows into the estuary of the Yangtze River. This stream has been deepened so that good-sized ocean ships can reach Shanghai.

The new, or "European," portion of Shanghai has broad, well-paved streets and modern buildings. Along the *Bund*, as the water front is called, there are fine hotels and large stores, business buildings, and warehouses, most of which belong to foreign companies. *See Figure 327.*

In Shanghai, as in Canton, the older part of the city, where the Chinese live, has the narrow, crooked streets and the crowded houses, shops, and workshops of old China. It is a fascinating experience to wander through this old city, to watch the craftsmen at their work, to visit the shops and tea rooms, and to see the jugglers who entertain the people for a small fee.

A great shipping center. Just as Canton owes its growth to the fact that it is the ocean gateway for the rich lowland of the Si River, so Shanghai owes its growth to a location which makes it the ocean gateway for the rich lowlands of the Yangtze basin and the south-



Courtesy of Canadian Pacific Steamships

Figure 327. The Bund, or water front, at Shanghai. Notice the broad boulevard with its parking spaces for automobiles and its "safety platforms" for people who are waiting to get on the street cars. Notice also the many modern buildings. The building which has the clock in the tower is the Shanghai customs house.

ern part of the Plain of China. Its harbor is always crowded with boats of all kinds, from Chinese junks and sampans to great ocean ships from distant lands. On both sides of the river there are docks where ships load and unload every day in the year. When the docks are full, as often happens, ships anchor in the river, and their cargoes are carried to shore in small boats.

Turn to the map on page 298 and name the leading imports of Shanghai. Large quantities of imported goods are loaded on river boats at Shanghai and taken up the Yangtze to Hankow and other interior cities. Coming back down the river, the boats bring raw silk, cotton, tea, and other products from the farm lands in the Yangtze lowlands to be used in Shanghai or to be shipped from there to distant lands.

Manufacturing in Shanghai. In Shanghai there are cotton mills, silk mills, shipbuilding plants, flour mills, and many other industrial plants where thousands of Chinese are learning to carry on manufacturing in Western ways. Why is it natural that industrial plants of the kinds named above should be located at Shanghai? What reason can you give for the fact that Shanghai has been one of the cities to take the lead in developing manufacturing in China?

Sentences to complete. Complete each sentence below by giving reasons:

1. Rice is grown on nearly every farm in south China and middle China because ________________.
2. Tea is an important crop in these sections of China because ________________________________.
3. The lowland of the Si River is well suited to the growing of sugar cane because __________________.
4. Many farmers in south China and middle China cultivate mulberry trees because _____________.
5. The Szechwan Basin is a rich farming region because __________.
6. The Yangtze River is an important highway of travel and transportation because _________________________.
7. Canton and Shanghai are great seaports because ________________________________.

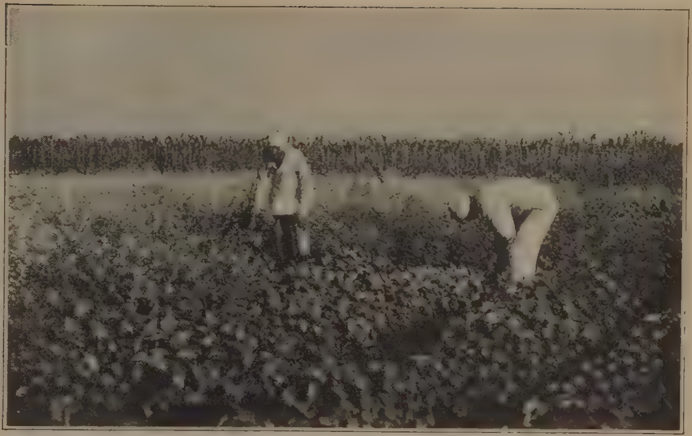


Figure 328. Chinese farmers working in a field of soy beans. In the background is a field of kaoliang, a variety of millet which is grown extensively in north China for bread grain.

North China and Manchuria

The Plain of China. North of the Yangtze lowlands, between the mountains and the sea, is the Plain of China, another rich farming region crowded with about one hundred million people. This plain has a cooler climate than the lowlands farther south, and so its crops are somewhat different.

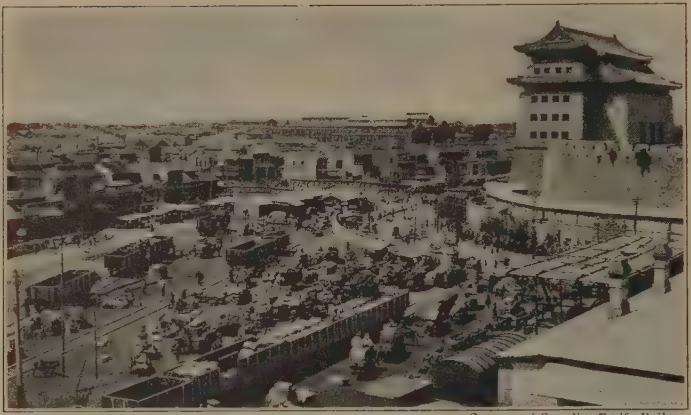
Rice and cotton are grown in some parts of the plain, but wheat and other temperate grains are more important crops. Among these grains is millet, which provides food for large numbers of the poorer people. In the peninsula of Shantung, which extends into the Yellow Sea, the raising of silkworms is important.

Among the important crops of north China, and also of Manchuria, are soy beans. These are both a food crop and a money crop. The Chinese eat them as a vegetable, make a sauce from them to flavor their food, and use the oil in cooking as we use lard. They also export large quantities of soy beans and bean cake, chiefly to Japan. *See Figure 328.*

A river-made plain. The reason that the Plain of China is so fertile is that it is made up of fine sands and mud washed from the mountains on the west and spread out in a series of deltas and flood plains. The Hwang River has done most of this work. Find this river on the map on page 298 (*C3*) and trace its course across the plain to the sea. The Chinese word *hwang* means "yellow," and the river gets its name from the fact that it carries so much mud that it is yellowish in color. In building this plain on which so many millions of Chinese people live, the Hwang has shifted its course several times, and its mouth is now far to the north of the point where it entered the sea years ago.

"China's Sorrow." The Hwang is also known as "China's Sorrow" because it often overflows and floods vast areas of this lowland of its own making. Some of the plain is lower than the surface of the river, and the people have built high banks in an effort to keep the stream in its channel. In times of flood, however, the river breaks through the banks just as the Mississippi breaks through its levees.

Each time the Hwang overflows, the mud which it carries settles on the land and forms



Courtesy of Canadian Pacific Railway

Figure 329. One of the freight yards at Peiping, where goods are transferred from one railroad line to another. At the right in the picture is one of the outer gates of Peiping, built long ago.

a coating of new soil for the farmers to use, but the floods often destroy the crops and sweep away the people's houses. At times the flood comes so suddenly that thousands of people are drowned. When great floods occur in China and crops are destroyed, periods of terrible famine follow, and large numbers of men, women, and children starve to death.

Canals and waterways. The Plain of China is covered with a network of waterways. Some of them are old courses of the Hwang and others are canals. The Grand Canal, which is nearly a thousand miles long, was completed more than six hundred years ago. These waterways are important highways of travel and transportation in the plain, and boats move slowly along them carrying farm products to market and passengers from one place to another. In the streams and canals here, and in all parts of China, many fish are caught, and fishing helps greatly to increase the food supply.

Peiping. One of the most interesting cities in the world is Peiping, which for so many centuries was the capital of China. This city was formerly known as Peking. Find it on the map on page 298 (*C3*) and notice its location near the northern margin of the Plain of China. Notice also that Peiping is better served by railroads than most of the Chinese cities, for it can be reached by train from Shanghai, from Mukden, in Manchuria, and from Hankow, in the Yangtze Valley. The railroad which runs southward from Peiping through Hankow will sometime be continued to Canton. At present, however, there is no unbroken north-south railroad line through China. *See Figure 329.*

Peiping is not a seaport and it is not on a navigable river, yet it is the second largest city of China. Its location was chosen by a Chinese emperor of long ago who did not care for advantages for manufacturing or trade, but who wanted a beautiful capital for his seat of government. As years passed, the Chinese emperors built magnificent palaces and temples in the capital city and gathered together many of the most remarkable works of Chinese art.

In approaching Peiping you will see the thick walls which were built long ago to keep out enemies, and the great gates which were always closed and guarded at night. Within the city is an area surrounded by another wall and known as the "Forbidden City." In this area is the palace where the emperors lived with their families and their servants, and where they received representatives of other nations. Very few other people were ever allowed to enter it.

Street scenes in Peiping. Peiping, like the other large cities of China, has its old sections with narrow streets and little one-story houses and its new section with paved streets and modern buildings, some of which are built in Western style and some in Chinese style. Visitors enjoy especially the attractive shops where all kinds of Chinese goods are sold. *See Figure 330.*

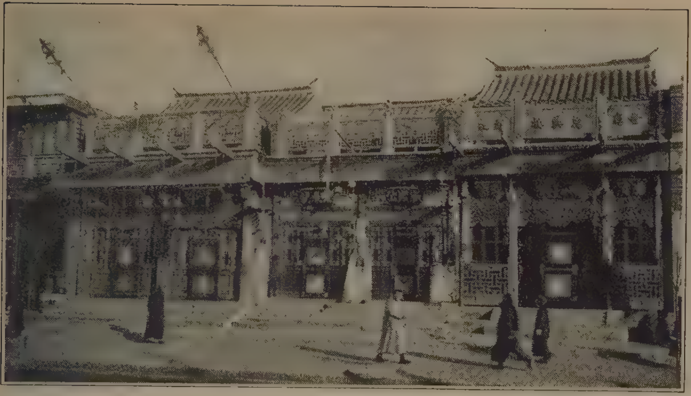


Figure 330. Some of the shops in Peiping. Notice their beautifully carved fronts. The one at the left is a silk shop, the one in the middle a candle shop, and the one at the right a perfume shop.

Among the interesting sights in Peiping are the camel trains coming in from the desert regions of Mongolia. They come from hundreds of miles away, loaded with wool and hides, and they go back carrying food and other supplies which the people of Mongolia need. *See Figure 331.*

Some Chinese homes. In Peiping, as in the other cities of China, most of the people are very poor, but there are a few who live in great comfort. Their homes are made up of a number of buildings facing an inner court or garden. Different buildings serve different purposes. A Chinese gentleman's library and living room are often in a building on one side of his court, while the sleeping rooms are in another building on the other side. The food is prepared in a third building and carried by servants to a fourth, which serves as a dining room. In homes of this kind there are beautiful works of art, books, and most of the comforts and luxuries found in wealthy homes in Europe and America.

A center of learning. Peiping is not a great commercial or industrial city, and it owes its importance today to the fact that so much wealth and culture came to center there in the centuries when it was the capital of China. It has an excellent medical school, and in and near the city there are many colleges and other institutions of learning.

The Great Wall. Many visitors to Peiping travel a little farther north to see the Great Wall which the Chinese built more than two thousand years ago to keep out invaders from the northwest. This wall is one of the wonders of the world, for it runs westward for more than 1500 miles, climbing steep mountain slopes and descending into deep river valleys and gorges. *See Figure 332.*

Tientsin. On the map on page 298 find Tientsin, the chief port of north China, and the third largest city of the republic (*C3*). This city is located about 40 miles from the coast on a river which has been made navigable by dredging and straightening. The map shows that it is the northern terminus of the Grand Canal and that it is connected with Peiping, Shanghai, and Mukden by railroads.

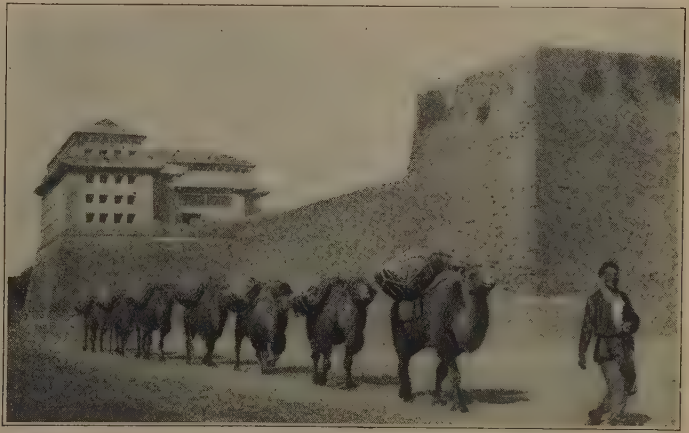


Figure 331. A camel train leaving Peiping for Mongolia. Turn to the map on page 295 and see if you can discover a reason why Peiping is the center for trade between Mongolia and eastern China.

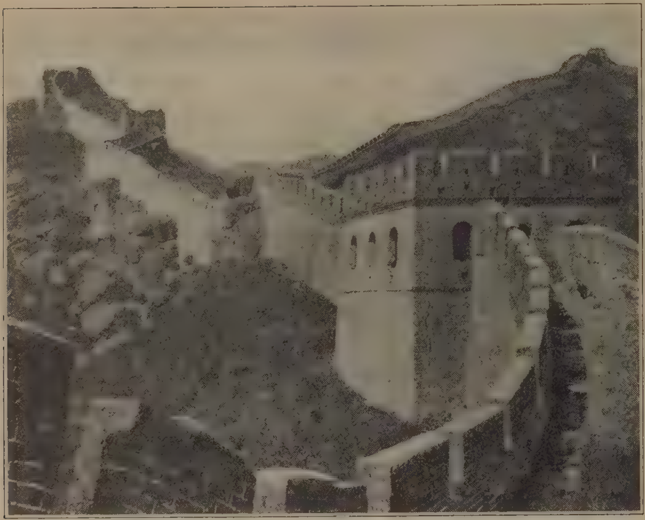


Figure 332. A view of the Great Wall of China, showing how it climbs the mountain slopes. During the centuries when the wall was used for protection, it was patrolled by Chinese soldiers.

Because of its railroads and its shipping, Tientsin is a busy commercial center. Boats from other parts of China and from distant lands come to its wharves, bringing goods to be distributed to various parts of north China, and carry away products of that part of the country. Among the leading exports to distant lands are soy beans, bean cake, and raw cotton, which go chiefly to Japan. Can you explain why? Among the imports, cotton goods from Japan and various kinds of manufactured goods from the United States and Great Britain hold high rank.

Like Shanghai, Tientsin is a manufacturing city as well as a seaport, and has cotton mills and many other kinds of manufacturing plants. Long ago this city became a center for the weaving of Chinese rugs, using wool from Mongolia. Rug-making is still the leading industry of Tientsin, and large quantities of modern Chinese rugs are exported to our country.

From Tientsin to Mukden. If we wish to travel from Tientsin to Mukden, in Manchuria, we have a choice of two routes. We may go all the way by train, or we may take a boat from Tientsin to Dairen, and then complete our journey by train. Trace both routes on the map on page 298. What nation controls the port of Dairen?

The Manchurian Lowlands. When we reach the Manchurian Lowlands, we shall be in a region where the winters are much longer and colder than in the other lowlands of China. For centuries the Chinese people have preferred to stay in the warmer parts of their country, even though they were badly crowded there. But every year during the last twenty years about a million Chinese people have left their homes farther south and migrated, or moved, into this northern lowland. This is one of the greatest migrations in human history. It is still going on, and it is probable that many more Chinese people will settle in this region.

New lands to be developed. The new settlers are largely farmers who are buying land,

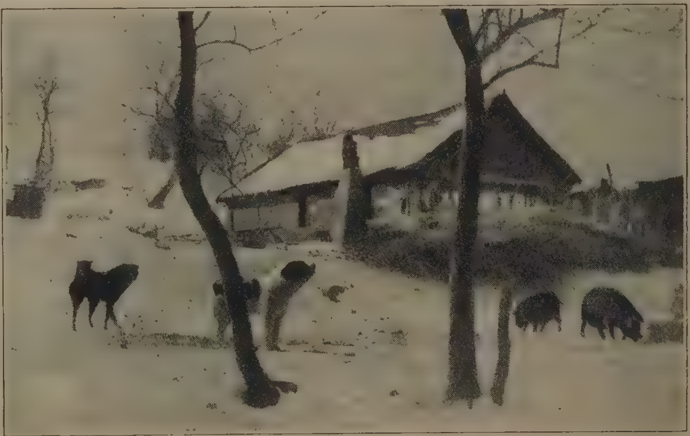


Figure 333. A Chinese settler's house in Manchuria. The owner of the house is a farmer, and he is making a better living than he did in his old home. Why? At what season was the picture taken?

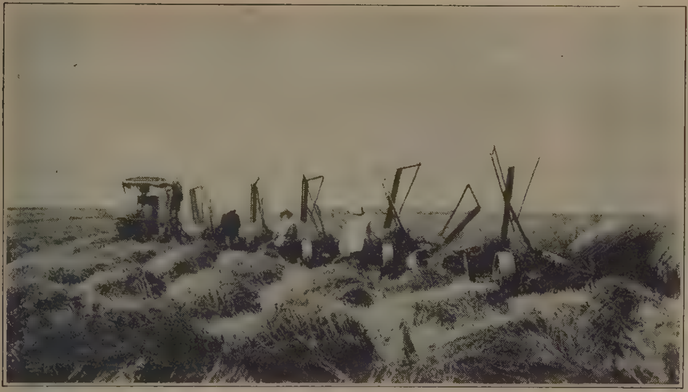


Figure 334. Harvesting wheat in Manchuria. The farmers are using a tractor which is drawing six mowing machines. Manchuria is the only part of China where farming machinery is in use.

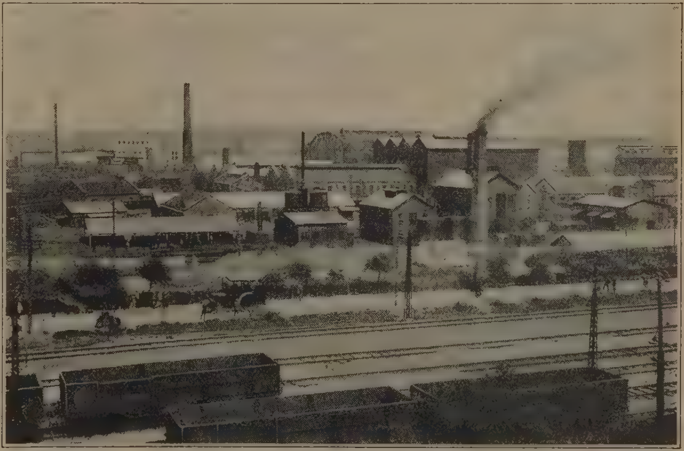
building houses, and turning unused lands into crop lands. It is thought that as yet only about half the land that can be used for farms is cultivated. The principal crops of the region are wheat, millet, barley, and soy beans, and because the region is not yet overcrowded, there is a surplus of foodstuffs for export to Japan and to the more densely populated regions farther south in China. The Chinese are planning to build many more miles of railroads in Manchuria, and thus help still further to develop this great food-producing section of their country. *See Figures 333 and 334.*

Industrial development. Manchuria is fortunate in having coal and iron ore. There are valuable coal mines near Mukden, and iron ore is mined somewhat farther south, between Mukden and Dairen. Here, near the iron mines, there are iron-and-steel plants which belong partly to the Japanese and partly to the Chinese. *See Figure 335.*

The large production of soy beans by the Manchurian farmers has led to the building of many factories for extracting and refining bean oil, pressing bean cake, and making soap. The Japanese port of Dairen is sometimes called the "City of Beans" because such large quantities of soy beans, bean oil, and bean cake are collected there for export. *See Figure 336.*

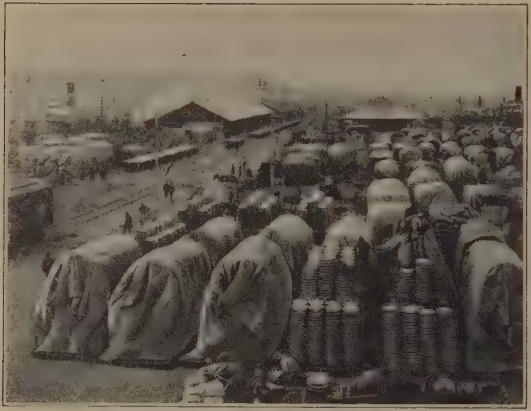
The largest city of Manchuria. Turn to the map on page 298 and find Mukden again (*D2*). Notice its location on the main line of the Manchurian Railroad, which runs northward from Dairen, joining the southern branch of the Trans-Siberian Railroad at Harbin. Mukden is the largest city and the chief commercial center of Manchuria. It is a city of two parts, one built by the Japanese, who have certain rights there, and the other built by the Chinese.

The Japanese section is the new part of the city, with wide streets and large business buildings, for it has been built since the Japanese have learned Western ways. The Chinese section is the old part of the city. Surrounding it is a high wall with narrow gateways where, in earlier times, soldiers were stationed.



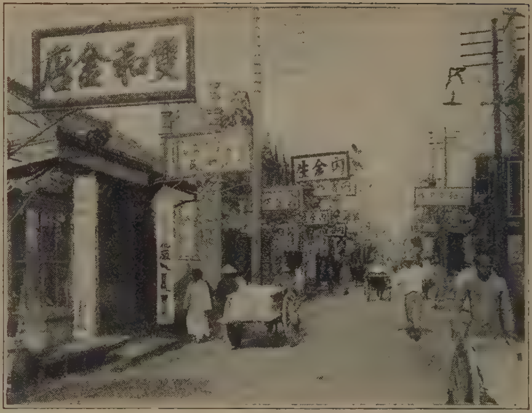
By Burton Holmes from Ewing Galloway, N.Y.

Figure 335. A coal-mining center in southern Manchuria. The mines here are controlled largely by the Japanese, and much of the coal is used to make coke for smelting iron ore.



Photograph from Ewing Galloway, N.Y.

Figure 336. Soy beans and bean cake at Dairen, ready to be shipped away. What country buys large quantities of these products from China?



By Burton Holmes from Ewing Galloway, N.Y.

Figure 337. A business street in the Chinese section of Mukden. Notice the two-wheeled carts and the Chinese signs on the shop fronts.

In some parts of the Chinese section the streets are narrow, and crowded with low buildings of stone or brick covered with plaster. In other parts the streets have been widened and the stores and houses are being remodeled. All the old buildings are dull gray, except where some shopkeeper has used a little bright-colored paint to decorate the front of his store. The new buildings are like those built by the Japanese in their section of the city. *See Figure 337.*

In Mukden, as in other Chinese cities, all kinds of handwork are done in little shops. But Mukden also has its mills and factories, built in recent years. Among them are flour mills, bean-oil mills, cotton mills, and factories where carpets and rugs are made from wool brought from Mongolia.

The rivalry for Manchuria. Manchuria, with its fertile farm lands and its mineral resources, is a region which both the Russians and the Japanese have long wished to control. Both countries have invested money in mines and railroads there, and the Japanese, especially, have done much more to develop the resources of the region than have the Chinese. The Chinese government realizes that Manchuria is of great value, and does not wish to lose it. For this reason, and because the rest of China proper is so greatly overcrowded, the government is doing all it can to encourage Chinese settlers to go to Manchuria.

Some things to explain. Give an explanation for the fact that

1. Wheat is a more important crop than rice in the Plain of China.
2. Manchuria is the only part of China where the farmers use machinery in their work.
3. The southern part of Manchuria has an iron-and-steel industry.
4. Mukden and Dairen have many bean-oil mills.
5. Rug-making is important in Tientsin.
6. Peiping is China's chief railroad center.
7. The Hwang River is often called "China's Sorrow."

Something to discuss. Discuss the following questions with your classmates:

1. Why do the Japanese and the Russians want Manchuria?
2. To which of these nations would Manchuria be most useful, and why?
3. Why are the Chinese anxious not to lose Manchuria?
4. What kind of work are Chinese settlers most likely to choose to do in Manchuria?

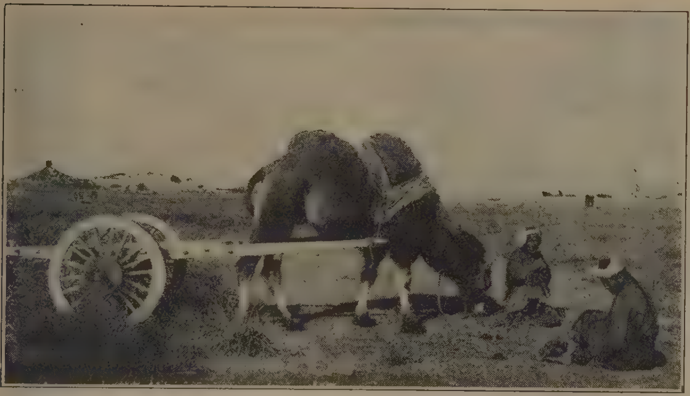


Figure 338. Two Mongolians with a camel cart. The cart consists simply of a pair of wheels with a wooden framework on which goods can be strapped. The Mongolians use these carts to transport their tents and other belongings as they move from place to place.

3. Mongolia, Sinkiang, and Tibet

West of China proper are the interior plateaus and mountains of the Chinese Republic. Review what you learned about these regions on pages 307 and 308. What can you say about their climate? Why do they contain only 2 per cent of the people of the republic?

The interior plateaus and mountains are divided politically among three great provinces: Mongolia, Sinkiang, and Tibet. Find these provinces on the map on page 295. Which two border the Soviet Union? In which one is the Gobi Desert? Which two border India? From what you have already learned about the interior of the Chinese Republic, how do you think most of the people of these provinces make their living?

The gateway to Mongolia. On the map on page 298 find the town of Kalgan (*C2*). This town is located in a pass in the mountains, and is the eastern gateway to Mongolia. Camel caravans from the dry regions to the north and west have long used this pass to reach Peiping, and today a railroad from Peiping runs through Kalgan to the great northern bend of the Hwang River. This is the only railroad which enters Mongolia. Elsewhere in the province travel and transportation are carried on by automobile and by camel caravan.

Mongolian nomads. Mongolia is nearly half as large as the United States, yet it is so dry that it has less than one fiftieth as many people. Most of the Mongolians are nomadic people, who wander about with their sheep, cattle, ponies, and camels, always in search of fresh pasture lands. They travel in groups, and wherever they stop to allow their flocks and herds to graze for a time, they set up a village of tents. *See Figures 338 and 339.*

From their flocks and herds the Mongolians obtain most of their food, and large quantities of wool, hides, and skins to sell to the people of China proper. In exchange for these products they buy cotton and woolen cloth, sugar, tea, and other supplies which they need. The people who live on the Plain of China have always dreaded the Mongolian nomads, for in times of greater drought than usual Mongolian horsemen have often invaded the plain and robbed the farming people. It was to keep out these invaders from Mongolia that the Chinese long ago built the Great Wall.

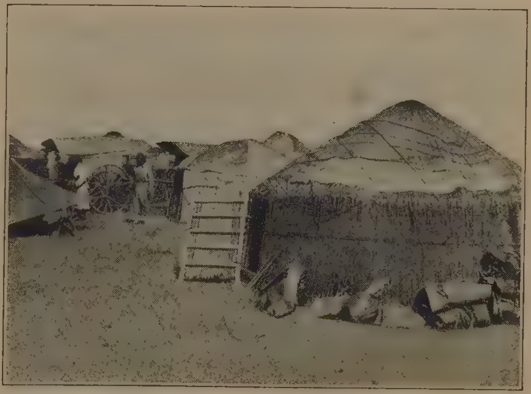


Figure 339. Mongol tents. The tents are made of a framework of poles covered with matting of woven straw, and can be put up and taken down easily.

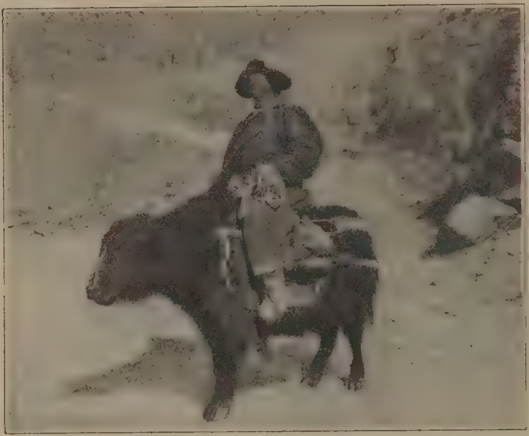


Figure 340. A Tibetan riding a yak. Yaks are the principal burden-carriers in Tibet, and they also furnish the people with meat, milk, and hides.

The capital of Mongolia. As you would expect, there are few towns in Mongolia. The largest one is Urga, the capital of the province, which is located on an old caravan route from Kalgan to Kiakhta, on the southern border of Siberia. From Kalgan, Urga can be reached by automobile in five days and by camel caravan in thirty-five days. This town is a trading center where the Mongolians exchange wool, hides, and skins for furs from Siberia. Why do they need furs? Locate Urga on the map on page 295 (*J4*). Why is it a convenient place for trade between Siberia and Mongolia?

Sinkiang. Sinkiang is made up largely of the almost rainless regions known as the Zungarian Basin and the Plateau of East Turkestan. Turn to the map on page 70 and find the mountains which nearly surround these dry regions. Sufficient rain falls on the high mountains to give rise to streams which flow down the slopes bordering the deserts of Sinkiang. Because of this, western Sinkiang has a fringe of scattered farming villages along the mountainous margins of the deserts. Here the people keep sheep, and raise excellent crops of wheat, barley, cotton, fruits, and vegetables by means of irrigation.

The only way in which the people of Sinkiang keep in touch with the outside world is through the trade which they carry on with India and the Soviet Union. They have wool and cotton to exchange for sugar, tea, cotton cloth, and other things which they need.

The Plateau of Tibet. On the map on page 70 find the Plateau of Tibet (*G5*). What is its elevation? What kind of land surrounds the plateau? What mountains separate it from the northern plain of India? Prove by the map that all the longer rivers of China, southeastern Asia, and India rise in or near the margins of the Plateau of Tibet.

The Plateau of Tibet is the highest plateau in the world, higher even than the Plateau of Bolivia. Like that South American plateau, it is surrounded by high, rugged mountains, and is therefore very dry. Because of its high altitude, Tibet is also a cold land. Even in summer the days are cool, and the nights are very cold.

Most of the people of Tibet live in the valleys on the southern and southeastern margins of the plateau, where they are somewhat protected from the cold winds. In these valleys they manage to raise a little barley and wheat, and small quantities of vegetables and fruit, but their most valuable possessions are their sheep and their yaks. The yaks are especially valuable, because, like the llamas of Bolivia and Peru, they can work well in the high altitude. *See Figures 340 and 341.*

The people of Tibet carry on a little trade with the people of the eastern lowlands of China. They pack wool and sheepskins on the backs of their yaks and take them eastward to the outer borders of the mountains. There they meet Chinese coolies carrying tea, sugar, cotton goods, and other supplies to be exchanged for the wool and skins from the plateau. There is but little trade between Tibet and India because the Himalaya Mountains are very difficult to cross.

The capital of Tibet is the old city of Lhasa. The people of Tibet have never wanted outsiders to enter their country, and it is often difficult for travelers and explorers to obtain permission to visit Lhasa.

Some things to explain. Explain why

1. Mongolia, Sinkiang, and Tibet are thinly populated.
2. The Mongolians depend on camels for transporting goods, while the Tibetans depend on yaks.
3. Farming is of some importance in Sinkiang.

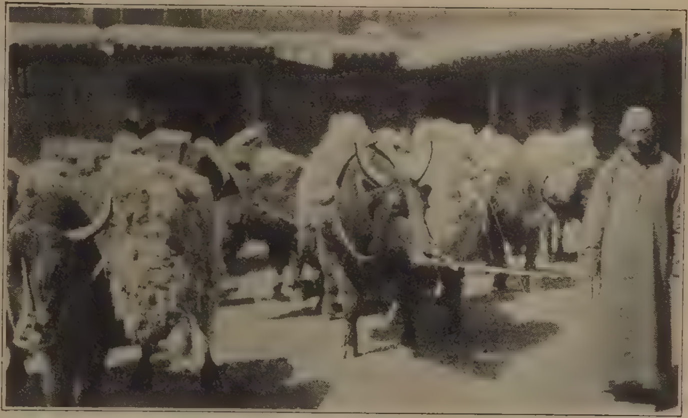


Figure 341. Yaks in the yard of a small inn in Tibet. They are on their way to the eastern border of Tibet, loaded with sheep's wool which their owner will exchange for supplies from China.

4. CHINA — PAST AND PRESENT

At the beginning of this chapter you learned that for thousands of years the Chinese lived by themselves and knew little of what was going on in the outside world. During all those years they were isolated, or kept apart, from other nations. Do you know what caused this isolation, and how it finally came to an end?

Land barriers and water barriers. As you know, the densely populated lowlands of China proper are bordered on the west by a vast stretch of high mountains and dry plateaus. Even today travel is difficult in these regions, and for thousands of years people feared to cross them. Thus the mountains and plateaus long formed a broad, uninhabited barrier between China and the countries farther west in Eurasia.

On the south and east, China is bordered by the ocean waters. These too were barriers for many centuries, for until a few hundred years ago there were no ships large enough and strong enough to withstand the ocean storms, and few sailors dared to venture out of sight of land.

Early Chinese civilization. Cut off from contact with the rest of the world by land barriers on the one hand and water barriers on the other, the Chinese developed a civilization all their own. From the earliest times most of the people were farmers. As population increased, there were more and more people to be fed, and since there was little or no trade with the outside world, the farmers had to find ways to make every acre of land produce all that it possibly could. Thus, little by little, China became an overcrowded country of small farms.

During the long period of isolation the Chinese learned how to make all the things they needed, and many of them became very skillful and artistic craftsmen. When Marco Polo, the Venetian traveler, reached China in the thirteenth century, he marveled at the beautiful silks, the fine porcelains, the furniture inlaid with pearl shell, and the carvings in ivory and jade which he found there.

During all these centuries China produced writers and scholars, some of whom were as great as any whom the Western world had produced, but their numbers were very few compared with the millions of people who had no education. Even today four fifths of all the people of China have never had a chance to go to school, and cannot read or write.

The opening-up of China. It was several hundred years after Marco Polo's visit to China before the Chinese came to have much interest in the Western nations. In the meantime, the Western nations had been making wonderful progress in science and engineering. Large ships were built which could cross and recross the oceans safely. The steam engine was invented, and steam was put to work to help man in manufacturing and in transportation. The Western nations began to take a deep interest in all distant lands, for they needed to discover new sources of raw materials and new markets for manufactured goods.

These changes led the Western nations to attempt to carry on trade with China. The first efforts, however, were unsuccessful, for the Chinese were satisfied to continue living by themselves, and they did not welcome foreigners or foreign trade. At last, in 1842, the British were successful in getting the Chinese government to sign a treaty allowing foreign ships to trade at Canton, Shanghai, and three other Chinese ports. This was the end of the period of Chinese isolation, and the beginning of the opening-up of China to trade and other contacts with the outside world.

Chinese trade. Today the ships of all nations are allowed to enter all the Chinese ports, and China carries on trade with many distant lands. The Chinese exports of highest value are raw silk, soy beans, bean cake, raw cotton, and tea. What class of people in China produce all these leading exports?

Among the imports, cotton goods, machinery, and other manufactures hold the leading place, followed by foodstuffs, especially rice and sugar. Large quantities of mineral oils are also imported, chiefly from the United States.

More trade is carried on with Japan than with any other country. That is partly because Japan is close by, but mostly because the Japanese need the raw materials which the Chinese have for export, and because they can supply many of the manufactured goods which the Chinese need. Next to Japan, our own country and Great Britain have the largest shares in Chinese trade.

The new China. Ever since 1912, when the Chinese Empire became the Chinese Republic, there have been wars within the country, and it has been difficult to establish a strong central government. Yet these years have seen many changes in China, and much progress in education, business, manufacturing, and foreign trade.

Each year Chinese students have come to the United States to study in our schools and colleges, and in this way have learned Western ways of living and working. Returning to their own country to teach, to go into business, or to take government positions, they have become leaders in introducing modern ways of doing work.

Little by little, farming methods are being improved, mines are being opened, factories are being established and equipped with modern machinery, railroads are being built, roads are being improved, and foreign trade is being increased. Schools, which were long found only in the cities, are being opened in the country districts, and in many of them mothers and fathers are learning to read and write in the same classes with their children.

It is never safe to predict just what will happen in any country in the world, but it seems now as if China, with its wealth of natural resources, and with its industrious people now awakening to Western ways, must certainly become more prosperous, and will probably play a much greater part in the affairs of the world in the future.

Special credit work. Try to find a book which tells about Marco Polo, and describe his visit to China to your classmates.

Finding contrasts. You have learned that China is a land of great contrasts. Describe the contrasts listed below, using the pictures referred to as a help.

1. Contrasts in surface: Figures 320 and 334.
2. Contrasts in methods of doing farm work: Figures 322, 328, and 334.
3. Contrasts in means of transportation: Figures 318, 319, 321, 325, 329, 331, 341.
4. Contrasts in methods of carrying on manufacturing: Figures 324 and 326.

Giving reasons. Complete the following sentences by giving reasons:

1. Ninety-eight per cent of the people of the Chinese Republic live in China proper because ____________________________________.
2. China long ago became an overcrowded country of small farms because ______________.
3. Even today farming is far more important in China than manufacturing or commerce because ____________________________________.
4. In many parts of China travel and transportation are slow and difficult because ______ ____________________________________.
5. The larger rivers of China are of great value to the people because ______________________.

Something to prove. You have learned that China has only just begun to carry on manufacturing in modern ways. By answering the questions below prove that it has great advantages for the development of manufacturing industries.

1. What mineral resource is sufficiently abundant in China to supply increasing numbers of mills and factories with power?
2. What three raw materials produced in various parts of the Chinese Republic can be used to increase the textile-manufacturing industries?
3. What advantages has China for increasing its manufactures of iron and steel products?
4. Why do manufacturers in China have no trouble in getting workers for their mills and factories?
5. Why does China itself provide large home markets for manufactured goods?
6. What advantages has China for marketing manufactured goods in foreign countries?

Naming cities. Name each Chinese city described below, and answer the questions about it.

1. The largest city and leading seaport of China. Why is it a great seaport? an important manufacturing city? Shan
2. The second largest city of China, and for many centuries the capital of the country. In what part of China is it located? Why is it the chief center of wealth and culture in China? Peif North Chi
3. The chief seaport of north China. For what densely populated lowland region is it the ocean gateway? Of what famous inland waterway of China is it the northern terminus? Tientsin [illegible] China Grand Canal
4. The chief seaport of south China. For what densely populated lowland is it the ocean gateway? Why is it an important center for the making of silk goods? Why do large numbers of its people live in boats? Canton Szechwan Mulberry Tre overcrowde
5. The three cities which form an industrial center in the Yangtze Valley. Why are they well located to manufacture cotton goods? silk goods? iron and steel? Hankow Hanyang Wuchan many peple iron
6. The capital of the Chinese Republic. On what river is it located? Nanking Yangtze
7. The largest city of Manchuria. Why is it a center for flour-milling? for the making of bean oil? Mukden
8. The seaport of Manchuria controlled by the Japanese. What are its chief exports? Dairen Soy Beans bean cake cotton

Some things to explain. 1. Give as many reasons as you can why the Chinese lived by themselves for so many hundreds of years, knowing almost nothing of the outside world. Barriers

2. Explain what happened in the outside world to make Great Britain and other Western nations anxious to open up China to foreign trade. fine things

3. Give what you think may be the reasons why the Chinese preferred to go on living by themselves.

4. Describe some of the changes which have come about in China since the Chinese began to learn Western ways. Explain how the Chinese have benefited by these changes.

5. Explain why (1) the leading exports of China are products of the farms; (2) the leading imports are cotton goods; (3) rice ranks high among the imports in spite of the fact that China is a great rice-growing country.

THE POLAR REGIONS

Foreword. As you know, the north pole and the south pole are the northernmost and southernmost points on the earth's surface. They are directly opposite each other, and the north pole is the same distance north of the equator as the south pole is south of the equator. Do you know how the polar regions, or the regions surrounding the two poles, differ from each other? The maps opposite this page will help you to answer this question.

The north polar region. The north pole is located in the midst of the Arctic Ocean, which is almost surrounded by the continents of the Northern Hemisphere. Prove by the map that the only broad opening to the Arctic Ocean is between Greenland and Europe.

For hundreds of miles outward in all directions from the north pole the Arctic Ocean is covered with ice the year round. The ice is very thick; but as it drifts with the winds and the currents, it cracks and breaks, and is often crumpled into long, high ridges. Because of the ice, it is impossible for any ship to make its way to the north pole.

Many explorers have tried to reach the north pole, but only a few have been successful. The first man to succeed was Rear Admiral Robert E. Peary, an American naval officer. Taking a negro and four Eskimos with him as companions, and dog sledges to carry supplies of food, he crossed the frozen polar sea and reached the north pole on April 6, 1909. Trace his route on the map.

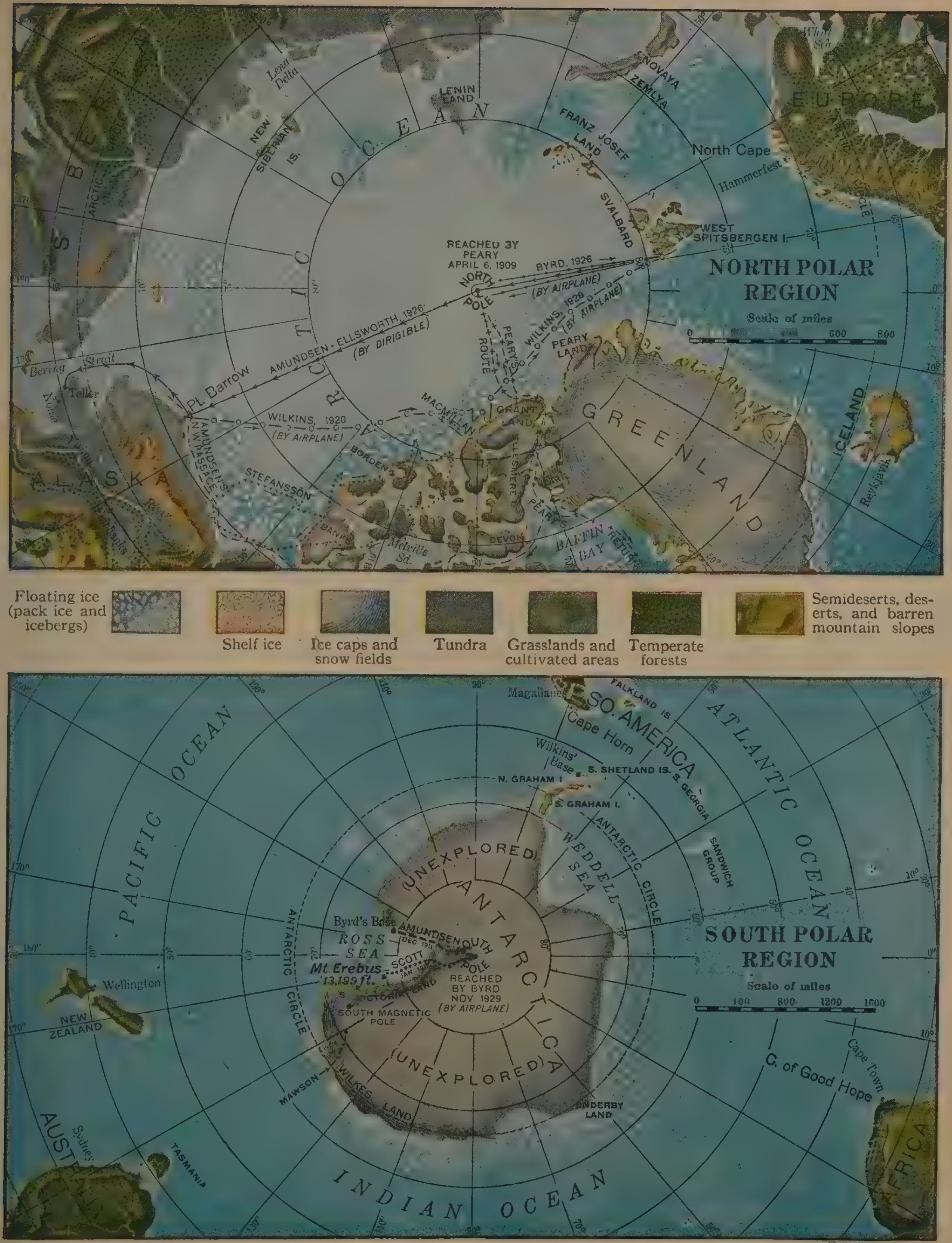
Seventeen years passed before anyone again reached the north pole. The man who made the second successful trip was another American naval officer, — Rear Admiral Richard E. Byrd. With one companion he flew in an airplane from Svalbard (Spitsbergen) to the north pole and back in about eighteen hours in May, 1926. In the same month Captain Roald Amundsen, a Norwegian explorer, and a group of companions flew in a dirigible from Svalbard to Point Barrow, in Alaska, passing over the north pole on their trip. Trace the routes of Byrd and Amundsen on the map.

North polar borderlands. You have already learned that the borderlands of the Arctic Ocean in Alaska, the mainland of Canada, and Eurasia (except the northwestern coast of Scandinavia) are cold treeless plains known as the tundra. Because the tundra is low land almost at sea level, the snow and ice which cover it most of the year melt away in the short Arctic summer, and grasses and flowering plants make their appearance for a few weeks.

Greenland and the northern islands belonging to Canada are higher, and because of this they are covered with ice and snow the year round. Only in a few scattered spots along their coasts is the land free from its covering of ice and snow during the summer.

You have also learned that the Arctic borderlands are very thinly populated, and that the people get their living by herding reindeer or by hunting the wild animals which live in the sea and on the land in these cold parts of the earth. Name the people of the polar borderlands of North America; of Europe; of Siberia. Why do these groups of people live nomadic lives?

On the upper map opposite this page find Etah, on the coast of Greenland, and Hammerfest, on the coast of Norway. Etah is an Eskimo village, and is the northernmost permanent settlement in the world. Hammerfest is the northernmost permanent settlement of white people in the world. What reason can you give for the fact that the extreme northwestern coast of Norway is not too cold for white people to make permanent homes there?


NORTH POLAR REGION
Scale of miles
0
200
400
600
800
ARCTIC OCEAN
NORTH POLE
REACHED BY PEARY APRIL 6, 1909
BYRD, 1926
(BY AIRPLANE)
AMUNDSEN-ELLSWORTH, 1926
(BY DIRIGIBLE)
WILKINS, 1928
(BY AIRPLANE)
PEARY'S ROUTE
PEARY'S RETURN
MACMILLAN
STEFANSSON
AMUNDSEN'S N.W. PASSAGE
SIBERIA
ARCTIC CIRCLE
Lena Delta
NEW SIBERIAN IS.
LENIN LAND
NOVAYA ZEMLYA
FRANZ JOSEF LAND
SVALBARD
WEST SPITSBERGEN I.
North Cape
Hammerfest
White Sea
EUROPE
ICELAND
Reykjavik
GREENLAND
PEARY LAND
GRANT LAND
ELLESMERE
DEVON
BAFFIN BAY
BORDEN
BANKS
Melville Sd.
ALASKA
Pt. Barrow
Teller
Nome
Bering Strait
Yukon River
Fairbanks
Floating ice (pack ice and icebergs)
Shelf ice
Ice caps and snow fields
Tundra
Grasslands and cultivated areas
Temperate forests
Semideserts, deserts, and barren mountain slopes
SOUTH POLAR REGION
Scale of miles
0
400
800
1200
1600
PACIFIC OCEAN
ATLANTIC OCEAN
INDIAN OCEAN
SO. AMERICA
Magallanes
FALKLAND IS.
Cape Horn
Wilkins' Base
S. SHETLAND IS.
S. GEORGIA
N. GRAHAM I.
S. GRAHAM I.
SANDWICH GROUP
ANTARCTIC CIRCLE
WEDDELL SEA
(UNEXPLORED)
ANTARCTICA
Byrd's Base
AMUNDSEN DEC. 1911
SCOTT JAN. 1912
SOUTH POLE
REACHED BY BYRD NOV. 1929 (BY AIRPLANE)
ROSS SEA
Mt. Erebus 13,199 ft.
S. VICTORIA LAND
SOUTH MAGNETIC POLE
MAWSON
WILKES LAND
ENDERBY LAND
NEW ZEALAND
Wellington
AUSTRALIA
Sydney
TASMANIA
AFRICA
Cape Town
C. of Good Hope

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The scale of the North Polar map is approximately twice that of the South Polar map

The south polar region. The map shows that the south polar region is quite different from the north polar region, for most of the area within the antarctic circle is occupied by the great mass of ice-covered land which we call Antarctica. The south pole is in this southern continent. Antarctica is larger than Europe or Australia, but there are no people living there. From the map on page 327 tell which one of the inhabited continents extends farthest south toward Antarctica. Name the southernmost settlement in that continent.

South polar explorations. It is only a short time since men began to explore this great southern continent, and even now vast stretches of it are unknown. The first men to catch glimpses of the land in this part of the world were those who went to the Far South on sealing trips and whaling trips. Their reports led to the sending out of exploring expeditions from the countries of the Northern Hemisphere, and the outlines of Antarctica are now fairly well mapped.

In 1911 two exploring parties set out to find the south pole. One was headed by Captain Amundsen, and the other by Captain Robert F. Scott, a British naval officer. Amundsen and his companions reached the pole in December, 1911, and Scott and his party reached it five weeks later. Trace their routes on the map on page 327. Notice that both parties crossed the ice which fills the inner half of Ross Sea. This is a solid sheet of ice several hundred feet thick, and it covers an area as large as the British Isles.

No further attempt was made to reach the south pole until 1929. In that year Rear Admiral Byrd headed a large exploring expedition which made its base, or headquarters, on the margin of the Ross Sea ice barrier. In November Byrd and three companions flew in an airplane from their base to the pole and back in nineteen hours. This flight was much more dangerous than the one to the north pole, for the plane had to fly over high mountain ranges and through narrow mountain passes which were almost hidden in fog.

A continent buried under ice. From the reports which explorers have brought back from the south polar region we believe that Antarctica is a huge plateau much of which is at least 6000 feet in elevation. Most of it is buried under a thick cap of ice and snow, and so it is impossible to tell just what the surface beneath may be. Here and there snow-capped mountain ranges from 10,000 to 15,000 feet in elevation tower above the surface of the ice cap, and moving slowly down their slopes are great glaciers.

In places along the coast there are stretches of bare, rocky land. Along much of the coast, however, the ice cap reaches the sea, and it is hard to tell where the land really ends. Since the ice is always moving slowly toward the sea, huge blocks break from its outer margin and float off into the ocean, forming icebergs.

Whaling grounds in the Far South. Antarctica itself has no commercial value, but in the waters surrounding it there are large numbers of seals and whales. For more than a century the South Shetland Islands and South Georgia have been important centers of the sealing and whaling industries, and today seventy per cent of all the whales caught in the world come from the cold waters of the Far South. The Norwegians, as you know, are leaders in the whaling industry.

Sentences to complete. 1. No ships can reach the north pole because ___________________.

2. The northernmost permanent settlement in the world is ____ in _________. The people of this village are _______.

3. The northernmost permanent settlement of white people is _________ in ______.

4. Antarctica is uninhabited because ______.

5. The Norwegians send the most ships to the Far South because __________________.

INTERNATIONAL RELATIONS

Our study of geography has shown us that the conditions which influence the lives and work of the people of the earth are constantly changing. For thousands of years the mountains, the deserts, and the oceans were barriers to travel. During that period of history progress was slow, and people went on doing about as their ancestors had done before them.

In those early times, when the various nations were more or less isolated, most of the people engaged in the simpler occupations such as hunting, fishing, or farming. When men began to use steam power and then electricity, a new civilization developed. This new civilization brought with it the development of manufacturing on a large scale, and this, in turn, led to the demand for raw materials from various parts of the world and the need for world markets for manufactured goods.

A period of wonderful progress in science and engineering followed, and men invented new means of transportation. They built railroads, automobiles, airplanes, and larger and stronger ships. Little by little, these new and better means of transportation overcame the barriers which had kept the people of the world apart.

Today mail is distributed by all the leading nations of the world. Cable messages, telegrams, telephone messages, and radio messages are sent back and forth across international boundaries, or boundaries between countries, and across the oceans. All the advanced people of the earth coöperate with one another in the development of rapid means of communication.

We have organizations such as the International Red Cross which assist people throughout the world in times of misfortune. When disasters such as floods, fires, earthquakes, or volcanic eruptions occur, people in many different countries contribute money and send workers to help those who have lost their homes and their property. The spirit of good will and coöperation among the peoples of the world is growing stronger every year.

Many students of one country go to another to complete their studies. In the colleges, universities, and technical schools of the United States alone there are at least 10,000 foreign students every year. Professors and teachers from one country exchange positions with those of another, and thus, through education, a better understanding of the customs of the different countries is coming about.

We have learned that several of the leading nations are doing much to develop the resources and help the people in the backward countries of the world. They assist the native people by establishing good government, improving health conditions, opening schools, and introducing modern methods of farming, mining, and carrying on trade.

We are coming to see more and more clearly that helpful coöperation between all the nations of the world is desirable, for backwardness, disasters, and misfortunes in any part of the world lessen the prosperity of the rest of the world. Nations can no longer live by themselves, for the days of isolation have passed.

In our international relations it is important that the people in each country shall have an intelligent sympathy for the people of all the other countries. Such sympathy depends on a knowledge of the living conditions in the various parts of the world, and on a kindly point of view. These, in the end, will do more than anything else to maintain peace and good will among the nations of the earth.

Turn over to page 332.

KEY TO NUMBERS

North America

1. British Honduras
2. Costa Rica
3. Guatemala
4. Honduras
5. Nicaragua
6. Panama
7. Salvador

South America

1. British Guiana
2. Dutch Guiana
3. Ecuador
4. French Guiana
5. Paraguay
6. Uruguay

Europe

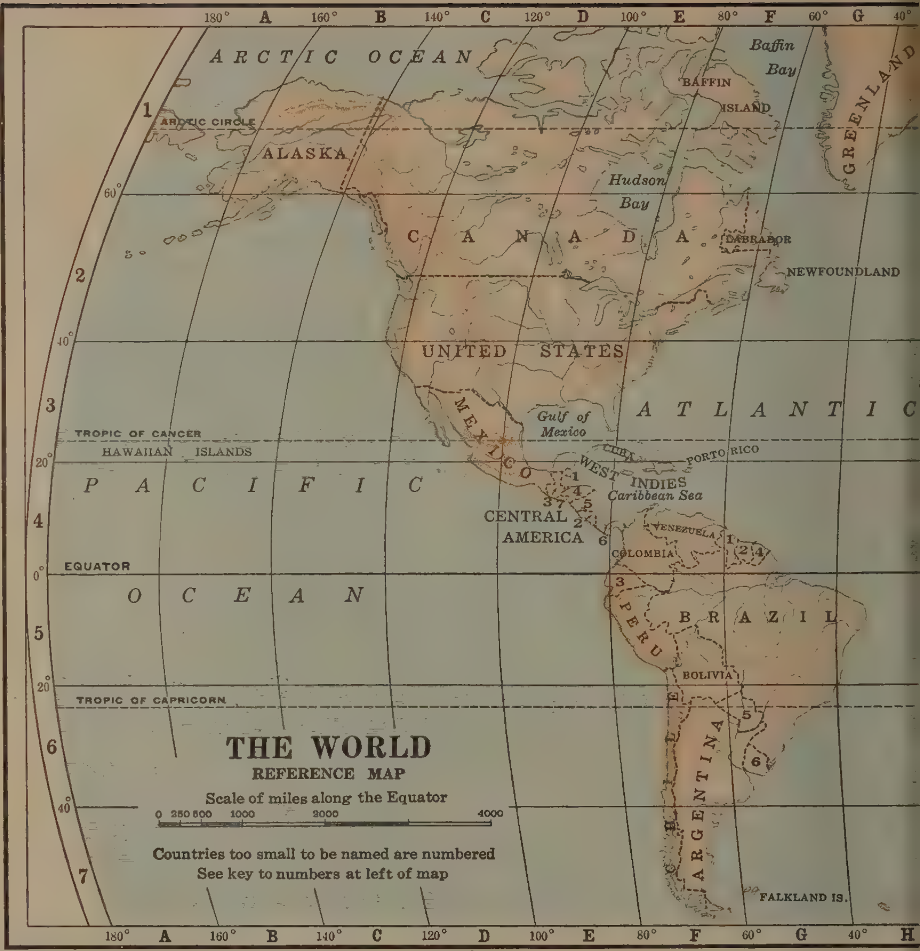
1. Albania
2. Austria
3. Belgium
4. Bulgaria
5. Czechoslovakia
6. Denmark
7. England
8. Estonia
9. Greece
10. Hungary
11. Irish Free State
12. Latvia
13. Lithuania
14. Netherlands
15. Northern Ireland
16. Portugal
17. Rumania
18. Scotland
19. Switzerland
20. Wales
21. Yugoslavia

Africa

1. Ashanti and Gold Coast
2. Bechuanaland
3. British Somaliland
4. Eritrea
5. French Somaliland
6. Italian Somaliland
7. Liberia
8. Nyasaland
9. Portuguese Guinea
10. Sierra Leone
11. Tunisia
12. Uganda

Asia

1. Bhutan
2. British Malaya
3. Irak
4. Nepal
5. Oman
6. Palestine
7. Syria
8. Trans-Jordan
9. Yemen


180° A 160° B 140° C 120° D 100° E 80° F 60° G 40°
ARCTIC OCEAN
ARCTIC CIRCLE
ALASKA
BAFFIN ISLAND
Baffin Bay
GREENLAND
Hudson Bay
CANADA
LABRADOR
NEWFOUNDLAND
UNITED STATES
Gulf of Mexico
MEXICO
ATLANTIC
TROPIC OF CANCER
HAWAIIAN ISLANDS
CUBA
PORTO RICO
WEST INDIES
Caribbean Sea
PACIFIC
CENTRAL AMERICA
VENEZUELA
COLOMBIA
EQUATOR
OCEAN
PERU
BRAZIL
BOLIVIA
TROPIC OF CAPRICORN
CHILE
ARGENTINA
FALKLAND IS.
60°
40°
20°
0°
20°
40°
1
2
3
4
5
6
7
180° A 160° B 140° C 120° D 100° E 80° F 60° G 40° H

THE WORLD

REFERENCE MAP

Scale of miles along the Equator

0 250 500 1000 2000 4000

Countries too small to be named are numbered
See key to numbers at left of map

Map Plate, Patented July 5, 1921 · Method of Making Maps, Patented July 5, 1921

AREAS AND POPULATIONS OF T

NORTH AMERICA

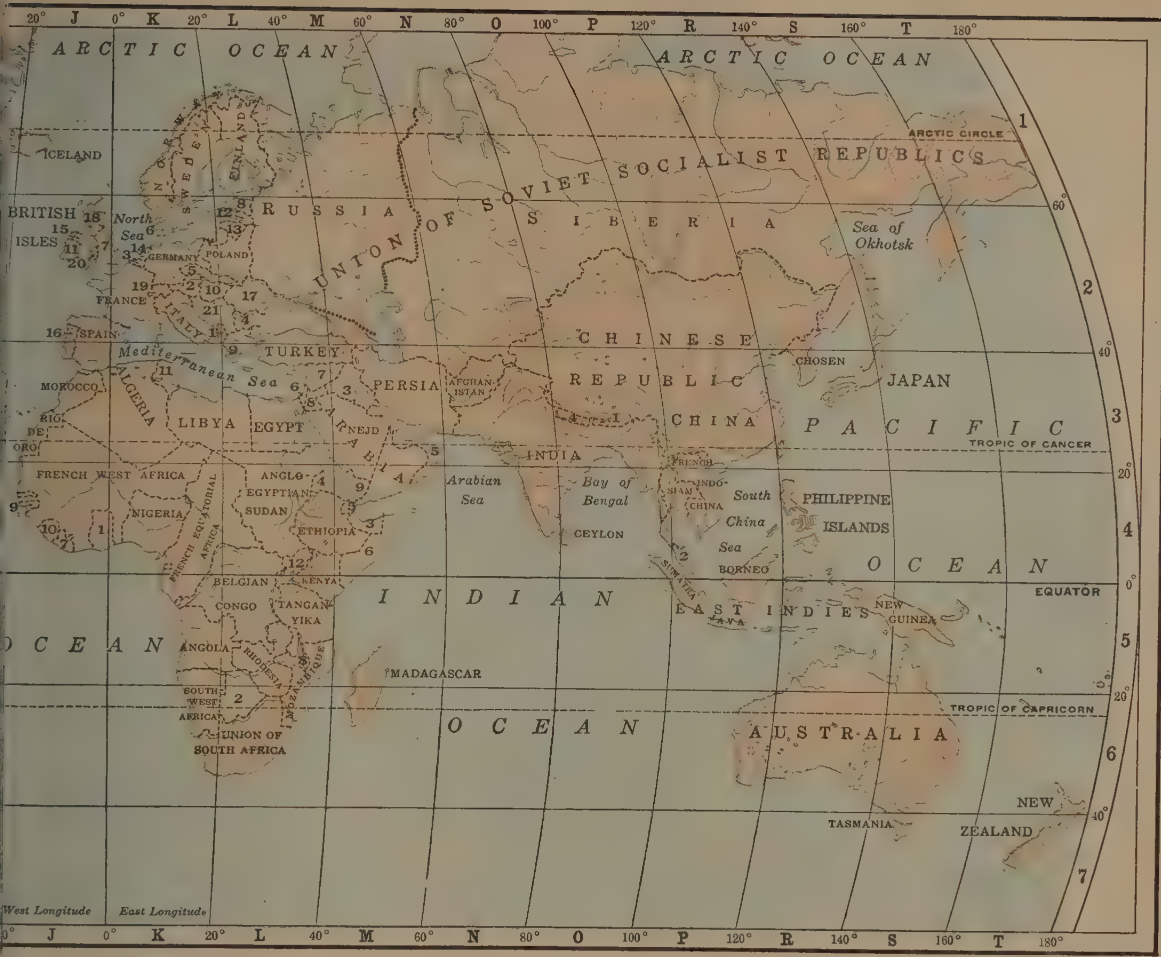
	AREA IN SQUARE MILES	POPULATION
Alaska	590,884	60,000
British Honduras	8,598	48,584
Canada	3,684,723	9,519,220
Costa Rica	23,000	471,524
Cuba	44,164	3,572,850
Greenland	827,300	14,355
Guatemala	42,353	2,119,165
Honduras	44,275	700,811
Labrador	110,000	3,977
Mexico	767,198	15,501,684
Newfoundland	42,734	262,177
Nicaragua	51,660	650,000
Panama	32,380	446,000
Salvador	13,176	1,634,000
United States	3,026,789	120,013,000

SOUTH AMERICA

	AREA IN SQUARE MILES	POPULATION
Argentina	1,153,119	10,312,189
Bolivia	514,155	2,820,119
Brazil	3,285,318	39,695,000
British Guiana	89,480	306,844
Chile	290,084	4,024,938
Colombia	440,846	7,000,000
Dutch Guiana	54,291	142,896
Ecuador	109,978	2,000,000
French Guiana	34,740	47,341
Paraguay	171,814	829,969
Peru	532,047	5,000,000
Uruguay	72,153	1,696,000
Venezuela	393,874	3,026,878

EUROPE

	AREA IN SQUARE MILES	POPU TIO
Albania	17,374	833,618
Austria	32,369	6,534,481
Belgium	11,755	7,932,077
Bulgaria	39,814	5,483,125
Czechoslovakia	54,207	14,356,600
Denmark	16,568	3,434,555
England	50,874	35,681,019
Estonia	18,362	1,117,270
Finland	132,608	3,582,406
France	212,659	40,960,
Germany	180,982	62,410,
Greece	49,912	6,204,
Hungary	35,875	8,525,
Iceland	39,709	103,
Irish Free State	26,592	2,971,
Italy	119,710	40,796,
Latvia	24,440	1,883,
Lithuania	21,683	2,286,
Netherlands	13,320	7,625,
Northern Ireland	5,994	1,248,
Norway	124,964	2,787,
Poland	149,958	30,213,
Portugal	35,490	6,032,
Rumania	122,282	17,393,
Scotland	30,405	4,882,
Soviet Russia	1,821,353	126,128,
Spain	190,050	21,338,
Sweden	173,154	6,087,
Switzerland	15,940	3,987,
Wales	7,466	2,205,
Yugoslavia	96,134	12,017,


ARCTIC OCEAN
ARCTIC CIRCLE
UNION OF SOVIET SOCIALIST REPUBLICS
RUSSIA
SIBERIA
ICELAND
BRITISH ISLES
North Sea
NORWAY
SWEDEN
FINLAND
GERMANY
POLAND
FRANCE
SPAIN
ITALY
TURKEY
Mediterranean Sea
MOROCCO
ALGERIA
LIBYA
EGYPT
RIO DE ORO
PERSIA
AFGHANISTAN
NEJD
ARABIA
Arabian Sea
INDIA
Bay of Bengal
CEYLON
CHINESE REPUBLIC
CHINA
CHOSEN
JAPAN
Sea of Okhotsk
PACIFIC OCEAN
TROPIC OF CANCER
FRENCH INDO-CHINA
SIAM
South China Sea
PHILIPPINE ISLANDS
BORNEO
SUMATRA
JAVA
EAST INDIES
NEW GUINEA
EQUATOR
FRENCH WEST AFRICA
NIGERIA
FRENCH EQUATORIAL AFRICA
ANGLO-EGYPTIAN SUDAN
ETHIOPIA
BELGIAN CONGO
KENYA
TANGANYIKA
ANGOLA
RHODESIA
MOZAMBIQUE
MADAGASCAR
SOUTH WEST AFRICA
UNION OF SOUTH AFRICA
INDIAN OCEAN
OCEAN
TROPIC OF CAPRICORN
AUSTRALIA
TASMANIA
NEW ZEALAND
West Longitude
East Longitude
20° J 0° K 20° L 40° M 60° N 80° O 100° P 120° R 140° S 160° T 180°
1 2 3 4 5 6 7

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RINCIPAL COUNTRIES OF THE WORLD

ASIA

	AREA IN SQUARE MILES	POPULATION
ghanistan	245,000	8,000,000
abia	1,000,000	7,000,000
utan	18,000	300,000
itish Malaya	56,603	3,864,413
ylon	25,332	5,288,792
inese Repub- ic	4,279,170	442,000,000
osen	84,949	19,522,945
tch East Indies	788,000	51,881,862
ench Indo-China	285,000	20,700,000
dia	1,805,332	318,942,480
k	143,250	2,849,282
pan	166,340	59,940,576
pal	54,000	5,600,000
lestine	10,000	882,000
rsia	628,000	9,000,000
ilippine Islands	115,026	11,744,172
m	200,148	9,831,000
Soviet Russia	6,294,901	20,810,200
Syria	60,000	2,046,857
Taiwan	13,840	3,994,884
Trans-Jordan		260,000
Turkey	494,538	13,660,275

AFRICA

	AREA IN SQUARE MILES	POPULATION
Algeria	847,500	6,063,496
Anglo-Egyptian Sudan	1,008,100	6,469,041
Angola	484,800	2,481,956
Ashanti and Gold Coast	80,000	2,078,043
Bechuanaland	275,000	152,983
Belgian Congo	918,000	8,500,000
British Somaliland	68,000	344,700
Egypt	383,000	14,186,898
Eritrea	45,754	402,793
Ethiopia	350,000	10,000,000
French Equatorial Africa	912,049	3,127,707
French Somaliland	5,790	85,778
French West Africa	1,247,191	13,541,611
Italian Somaliland	190,000	1,200,000
Kenya	225,100	2,736,517
Liberia	43,000	2,000,000
Libya	1,185,640	804,910
Madagascar	241,094	3,621,342
Morocco	218,525	5,309,146
Mozambique	428,132	3,482,914
Nigeria	335,700	18,765,690
Nyasaland	37,890	1,306,934
Portuguese Guinea	22,000	350,000
Rhodesia	436,950	2,240,729
Northern	287,950	1,244,761
Southern	149,000	995,968
Rio de Oro	109,200	495
Sierra Leone	31,000	1,541,000
Southwest Africa	311,820	258,905
Tanganyika	373,500	4,323,300
Tunisia	48,300	2,159,708
Uganda	94,204	3,157,008
Union of South Africa	471,917	6,928,580

AUSTRALASIA

	AREA IN SQUARE MILES	POPULATION
Australia	2,974,581	6,262,720
Borneo	237,976	2,024,590
Java and Madura	50,745	37,384,343
New Guinea	337,684	885,242
New Zealand	103,568	1,344,469
Sumatra	163,138	5,994,859

CONTINENTS

	AREA IN SQUARE MILES	POPULATION
Africa	11,500,000	140,000,000
Antarctica	5,000,000	
Asia	17,250,000	1,046,762,427
Australia	2,974,581	6,262,720
Europe	3,796,000	425,000,000
No. America	8,300,000	162,390,731
So. America	7,700,000	76,343,126

A General Review

A map test. 1. On an outline map of Europe print these names in the correct places, doing the work from memory.

Atlantic Ocean
Arctic Ocean
Mediterranean Sea
North Sea
Baltic Sea
Black Sea
Caspian Sea
Alps
Carpathian Mts.
Pyrenees
Sierra Nevada
Apennine Mts.
Ural Mts.
Caucasus Mts.
Rhine River
Danube River
Seine River
Elbe River
Volga River
Vistula River
Rhône River
Po River

2. Print the name of each European country in the correct place.

3. When you have finished, check your map by the map on pages 144–145 to make sure you have made no mistakes.

Matching countries and capitals. Below is a list of the capitals of the countries which are wholly or partly in Europe. Name the countries in the order in which the capitals are listed.

Paris
Oslo
Riga
Rome
Revel
Sofia
Bern
London
Berlin
Prague
Madrid
Vienna
Athens
Dublin
Belgrade
Angora
Brussels
Warsaw
Lisbon
Kovno
Moscow
Copenhagen
The Hague
Helsingfors
Bucharest
Stockholm
Budapest

Some things to explain. Explain as fully as you can why

1. Great Britain, France, Germany, and Belgium are important manufacturing countries.

2. Norway, Sweden, Finland, the Baltic countries, and European Russia are able to supply other countries with lumber, wood pulp, and paper.

3. France, Germany, Denmark, and the Netherlands are important farming countries.

4. Italy and Switzerland, with no coal and little iron ore, are manufacturing countries.

5. Spain, with abundant coal and iron ore, is not a great manufacturing country.

6. Czechoslovakia is one of the important manufacturing countries of Europe.

7. Spain, Portugal, Italy, and Greece export fruits, nuts, wines, and olive oil.

8. Norway, Great Britain, Denmark, and the Netherlands are important fishing countries.

9. Yugoslavia and Rumania are the only two Balkan countries which export grain.

10. The southern part of European Russia is one of the world's great wheat-growing regions.

11. Poland, Rumania, and European Russia are able to supply some of the mineral oils needed in the other European countries.

12. The resources of the European part of the Soviet Union are much more fully developed than those of the Asiatic part.

13. The internationalized rivers of Europe are a great help to Switzerland, Austria, Hungary, and Czechoslovakia.

14. Great Britain has the largest fleet of merchant ships of any country in the world.

A map test. 1. On an outline map of Asia print the following names in the correct places, doing the work from memory.

Pacific Ocean
Indian Ocean
Arctic Ocean
Lake Aral
Caspian Sea
Red Sea
Persian Gulf
Yangtze River
Hwang River
Brahmaputra River
Ganges River
Indus River
Lena River
Ob River
Yenisei River
Tigris River
Euphrates River
Himalaya Mts.
Ural Mts.
Caucasus Mts.
Philippine Islands
East Indies

2. Print the name of each Asiatic country in the correct place.

3. When you have finished, check your map by the map on page 295 to make sure that you have made no mistakes.

Naming capitals. Name the capital of each of the Asiatic countries listed below:

Siam
India
Persia
Irak
Ceylon
Afghanistan
Chinese Republic
Japanese Empire
Dutch East Indies
Philippine Islands

Topics for discussion. Following are some topics which you will find it interesting and worth while to discuss with your classmates.

1. Why so many millions of people are able to make a living in India, in China proper, and in Japan.
2. Why Siberia, southwestern Asia, and the interior of the Chinese Republic are so thinly populated.
3. Why the British regard India as one of the most valuable of all their possessions.
4. Why so many of the Western nations are deeply interested in developing the resources of the Orient, and in carrying on trade with the Oriental nations.
5. Why Japan is the only Oriental country which ranks among the half-dozen most powerful countries of the world today.
6. What possibilities there are that China may in time win for itself a place among the most prosperous and powerful countries of the world.

A map test. 1. On an outline map of Africa print the following names in the correct places, doing the work from memory.

Mediterranean Sea
Suez Canal
Red Sea
Atlantic Ocean
Gulf of Guinea
Indian Ocean
Atlas Mts.
Sahara Desert
Congo River
Nile River
Niger River
Zambezi River
Lake Victoria
Lake Tanganyika

2. Print the names of the three independent countries of Africa in the correct places.

3. Print the names of the larger British possessions, French possessions, and Italian possessions, and the name of the Belgian possession in the correct places.

4. When you have finished, check your map by the map on page 50 to make sure that you have made no mistakes.

Some questions about Africa. 1. What reasons can you give for the fact that the European nations have been so eager to obtain possessions in Africa?

2. Why have most of the native peoples of Africa been unable to remain independent of European control?

3. What problems do the Europeans face in developing the resources of the hot, rainy parts of Africa?

4. What parts of Africa are best developed today, and why?

Something to prove. In resources, occupations, and trade Australia and New Zealand are more like the countries of temperate South America than like any other parts of the world. Give as many facts as you can to prove that this is true.

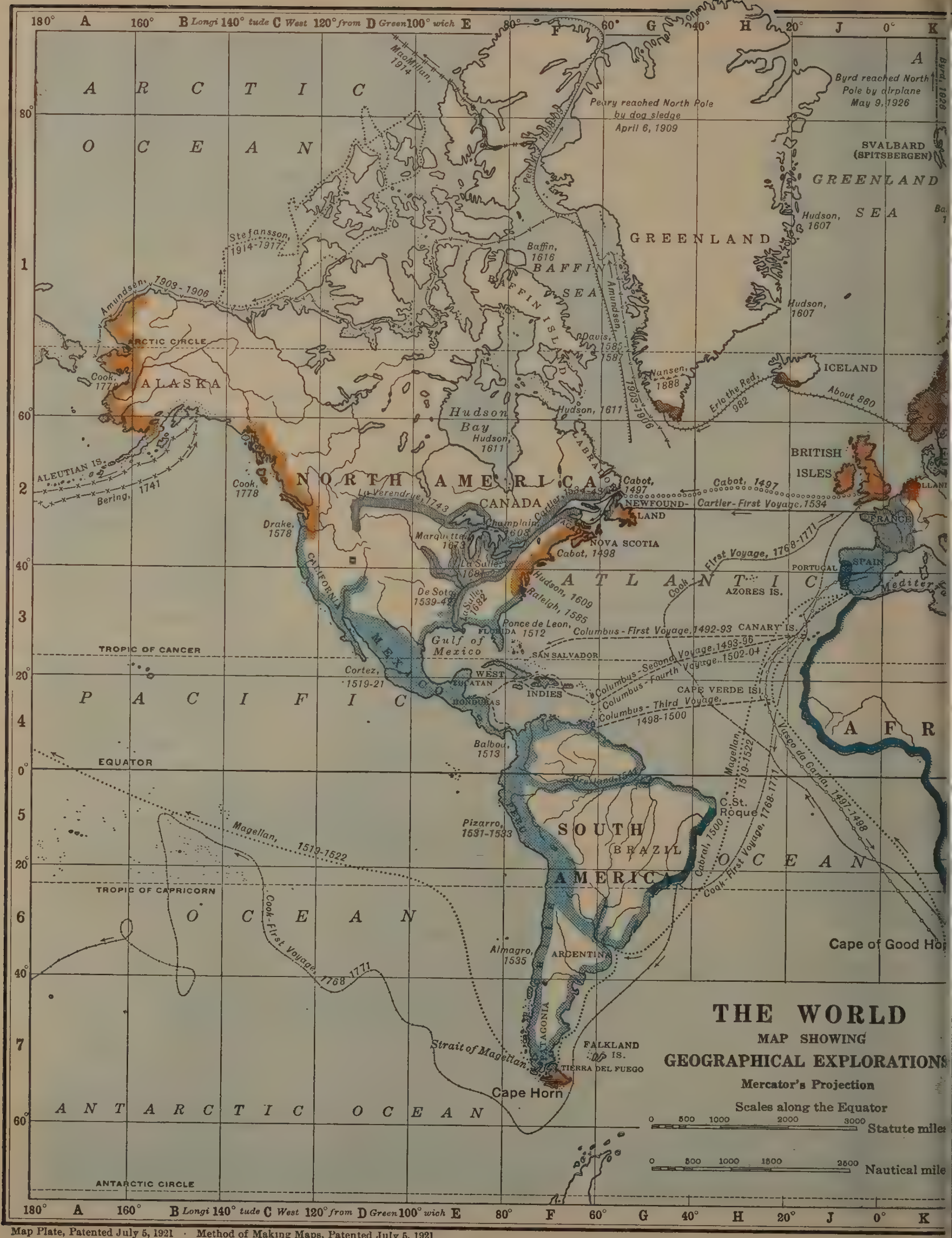
A city test. 1. Write down the names of the cities described below. When you have finished, you will have a list of the fifteen cities of the Old World which have over a million people.

(1) The capital of the British Empire.
(2) The capital of Germany.
(3) The capital of France.
(4) The largest city of Japan.
(5) The capital of the Union of Soviet Socialist Republics.
(6) The capital of Japan.
(7) The capital of Austria.
(8) The Baltic seaport of the Soviet Union.
(9) The leading seaport of China.
(10) The leading seaport of India.
(11) The western seaport of India.
(12) The largest city of Australia.
(13) The leading seaport of Germany.
(14) The capital of Egypt.
(15) The leading seaport of Scotland.

2. There are only eight cities in the New World with more than a million people. Six of them are in the United States. Try to make a list of these six cities from memory. Then check your list by the figures on page 337 and correct it if necessary.

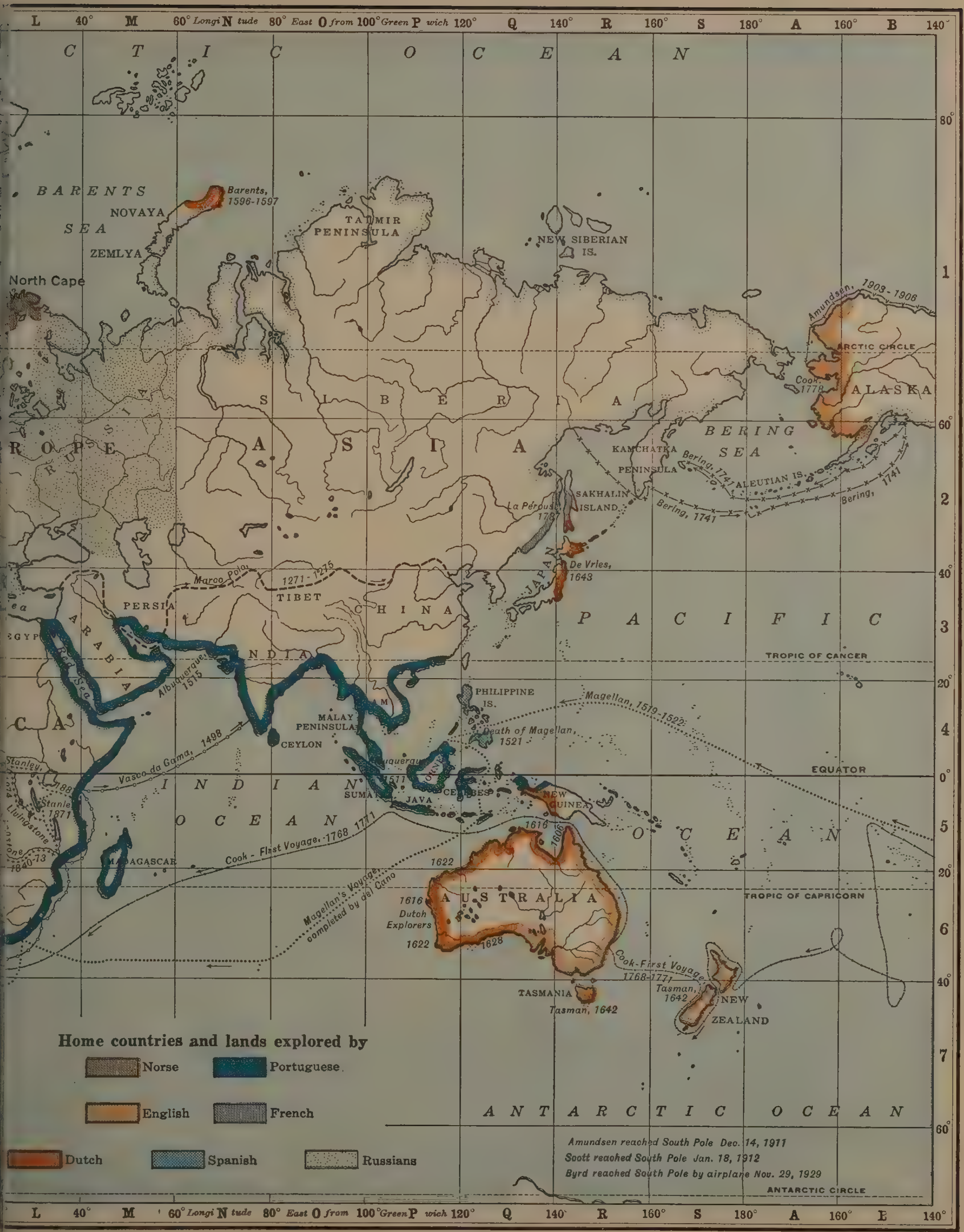
3. The other two cities in the New World with over a million people are the capital of Argentina and the capital of Brazil. Give their names.

4. Among these twenty-three cities of the world as a whole, how many are capitals of countries? How many are seaports? How many are lake ports? How many are river ports?


180° A 160° B Longi 140° tude C West 120° from D Green 100° wich E 80° F 60° G 40° H 20° J 0° K
ARCTIC OCEAN
MacMillan, 1914
Peary, 1909
Peary reached North Pole by dog sledge April 6, 1909
Byrd reached North Pole by airplane May 9, 1926
Byrd, 1926
SVALBARD (SPITSBERGEN)
GREENLAND SEA
Hudson, 1607
GREENLAND
Stefansson, 1914-1917
Amundsen, 1903-1906
Baffin, 1616
BAFFIN SEA
BAFFIN ISL.
Amundsen, 1903-1906
Davis, 1585-1587
ARCTIC CIRCLE
Cook, 1778
ALASKA
Nansen, 1888
Eric the Red, 982
ICELAND
About 880
Hudson Bay
Hudson, 1611
LABRADOR
ALEUTIAN IS.
Bering, 1741
Cook, 1778
NORTH AMERICA
Cabot, 1497
BRITISH ISLES
La Verendrye, 1743
CANADA
NEWFOUNDLAND
Cartier - First Voyage, 1534
Cartier, 1534
Drake, 1578
Champlain, 1608
Marquette, 1673
NOVA SCOTIA
Cabot, 1498
FRANCE
SPAIN
PORTUGAL
First Voyage, 1768-1771
CALIFORNIA
La Salle, 1682
De Soto, 1539-42
La Salle, 1682
Hudson, 1609
Raleigh, 1585
ATLANTIC
Cook
AZORES IS.
Mediter
Ponce de Leon, 1512
FLORIDA
Columbus - First Voyage, 1492-93
CANARY IS.
TROPIC OF CANCER
Gulf of Mexico
SAN SALVADOR
MEXICO
Columbus - Second Voyage, 1493-96
Columbus - Fourth Voyage, 1502-04
Cortez, 1519-21
WEST INDIES
YUCATAN
HONDURAS
CAPE VERDE IS.
Columbus - Third Voyage, 1498-1500
PACIFIC
AFR
Balboa, 1513
EQUATOR
Magellan, 1519-1522
Vasco da Gama, 1497-1498
Orellana, 1541
C. St. Roque
Pizarro, 1531-1533
PERU
SOUTH AMERICA
BRAZIL
Cabral, 1500
Cook - First Voyage, 1768-1771
OCEAN
Magellan, 1519-1522
TROPIC OF CAPRICORN
OCEAN
Cook - First Voyage, 1768-1771
Almagro, 1535
ARGENTINA
CHILE
Cape of Good Hope
PATAGONIA
Strait of Magellan
FALKLAND IS.
TIERRA DEL FUEGO
Cape Horn
ANTARCTIC OCEAN
ANTARCTIC CIRCLE
80° 60° 40° 20° 0° 20° 40° 60°
1 2 3 4 5 6 7
Scales along the Equator
0 500 1000 2000 3000 Statute miles
0 500 1000 1500 2500 Nautical miles

THE WORLD
MAP SHOWING
GEOGRAPHICAL EXPLORATIONS
Mercator's Projection

Map Plate, Patented July 5, 1921 · Method of Making Maps, Patented July 5, 1921


Home countries and lands explored by
Norse
Portuguese
English
French
Dutch
Spanish
Russians
ARCTIC OCEAN
BARENTS SEA
Barents, 1596-1597
NOVAYA ZEMLYA
North Cape
TAIMIR PENINSULA
NEW SIBERIAN IS.
Amundsen, 1903-1906
ARCTIC CIRCLE
Cook, 1778
ALASKA
SIBERIA
ASIA
RUSSIA
EUROPE
KAMCHATKA PENINSULA
BERING SEA
Bering, 1741
ALEUTIAN IS.
SAKHALIN ISLAND
La Pérouse, 1787
De Vries, 1643
JAPAN
Marco Polo, 1271-1275
PERSIA
TIBET
CHINA
PACIFIC
TROPIC OF CANCER
EGYPT
ARABIA
Red Sea
INDIA
Albuquerque, 1515
PHILIPPINE IS.
Magellan, 1519-1522
Death of Magellan, 1521
MALAY PENINSULA
CEYLON
Vasco da Gama, 1498
AFRICA
Stanley
Livingstone, 1840-73
Stanley, 1871
INDIAN OCEAN
SUMATRA
JAVA
CELEBES
BORNEO
Albuquerque, 1511
NEW GUINEA
EQUATOR
1616
1606
OCEAN
MADAGASCAR
Cook - First Voyage, 1768-1771
Magellan's Voyage, completed by del Cano
1622
AUSTRALIA
1616
Dutch Explorers
1622
1628
TROPIC OF CAPRICORN
Cook-First Voyage, 1768-1771
TASMANIA
Tasman, 1642
Tasman, 1642
NEW ZEALAND
ANTARCTIC OCEAN
Amundsen reached South Pole Dec. 14, 1911
Scott reached South Pole Jan. 18, 1912
Byrd reached South Pole by airplane Nov. 29, 1929
ANTARCTIC CIRCLE
L 40° M 60° Longitude 80° East from 100° Greenwich 120° Q 140° R 160° S 180° A 160° B 140°
N O P
80° 60° 40° 20° 0° 20° 40° 60°
1 2 3 4 5 6 7

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POPULATION OF LARGEST CITIES IN COUNTRIES OF THE OLD WORLD

EUROPE

Austria	
Graz	152,706
Linz	102,081
Vienna	1,857,400
Balkan Countries	
Athens	452,919
Salonika	236,526
Sofia	213,162
Baltic Countries	
Kovno	95,771
Revel	127,000
Riga	339,997
Belgium	
Antwerp	300,001
Brussels	815,198
Ghent	163,207
Liége	168,823
Czechoslovakia	
Bratislava	93,189
Brünn	221,758
Ostrova Moravská	113,709
Pilsen	88,416
Prague	676,657
Denmark	
Copenhagen	587,150
Finland	
Helsingfors	220,904
France	
Bordeaux	256,026
Havre	158,022
Lille	201,921
Lyon	570,840
Marseille	652,196
Nantes	184,509
Nice	184,441
Paris	2,871.429
St. Étienne	193,737
Strasbourg	174,492
Toulouse	180,771
Free City of Danzig	
Danzig	230,000
Germany	
Berlin	4,024,165
Bremen	294,966
Breslau	557,139
Chemnitz	331,655
Cologne	700,222
Dortmund	321,743
Dresden	619,157
Düsseldorf	422,633
Essen	470,524
Frankfurt on Main	467,520
Hamburg	1,079,126
Hannover	422,745
Leipzig	679,159
Munich	680,704
Nürnberg	392,494
Stuttgart	341,967
Great Britain	
Birmingham	952,800
Bradford	293,200
Bristol	385,700
Cardiff	225,600
Dundee	174,800
Edinburgh	426,300
Glasgow	1,060,500
Hull	296,600
Leeds	482,600
Leicester	245,000
Liverpool	872,900
London	4,541,000
Manchester	751,900
Newcastle on Tyne	288,500
Nottingham	265,700
Sheffield	524,900
Hungary	
Budapest	971,169
Ireland	
Belfast	415,151
Dublin	316,693
Italy	
Bologna	240,020
Catania	289,644
Florence	277,688
Genoa	624,659
Milan	941,070
Naples	966,423
Palermo	444,861
Rome	877,289
Trieste	252,517
Turin	570,173
Venice	253,608
Netherlands	
Amsterdam	734,884
Rotterdam	571,842
The Hague	416,179
Norway	
Bergen	91,443
Oslo	258,483
Poland	
Krakow	183,706
Lemberg	219,388
Lodz	451,974
Posen	184,756
Vilna	214,600
Warsaw	936,713
Portugal	
Lisbon	529,524
Oporto	215,625
Rumania	
Bucharest	345,628
Kishinev	114,100
Spain	
Barcelona	760,348
Madrid	808,366
Seville	215,107
Valencia	267,346
Sweden	
Göteborg	233,303
Malmö	117,197
Stockholm	464,699
Switzerland	
Basel	141,650
Bern	109,020
Geneva	126,700
Zürich	215,460
Turkey	
Constantinople	673,029
Union of Soviet Socialist Republics	
Dniepropetrovsk	233,001
Kharkov	417,186
Kiev	513,789
Leningrad	1,614,008
Moscow	2,025,947
Odessa	420,888
Rostov	308,224
Saratov	215,369
Yugoslavia	
Belgrade	250,000
Zagreb	130,000

ASIA

British Malaya	
Penang	123,069
Singapore	350,355
Ceylon	
Colombo	244,163
Chinese Republic	
Amoy	300,000
Canton	746,300
Changsha	535,800
Chungking	623,300
Dairen	222,400
Foochow	314,900
Hangchow	380,000
Hankow	289,804
Hanyang	456,312
Nanking	360,500
Ningpo	284,300
Peiping (Peking)	811,138
Shanghai	1,500,000
Soochow	500,000
Tientsin	800,000
Wenchow	202,700
Wuchang	597,967
Dutch East Indies	
Batavia	307,606
Surabaya	255,124
French Indo-China	
Binhdinh	147,199
Cholon	198,713
Hanoi	103,235
Saigon	123,550
India	
Ahmadabad	274,007
Bangalore	237,496
Bombay	1,175,914
Calcutta	1,327,547
Cawnpore	216,436
Delhi	304,420
Hyderabad	404,187
Karachi	216,883
Lahore	281,781
Lucknow	240,566
Madras	526,911
Poona	214,796
Rangoon	341,962
Japan	
Hiroshima	195,731
Keijo (Seoul)	306,363
Kobe	644,212
Kyoto	679,963
Nagoya	768,558
Nagasaki	189,071
Osaka	2,114,804
Tokyo	1,995,567
Yokohama	518,902
Philippine Islands	
Manila	285,306
Siam	
Bangkok	550,000
Southwest Asia	
Aleppo	140,000
Bagdad	145,000
Beirut	80,000
Damascus	170,000
Isfahan	100,000
Jerusalem	62,678
Mecca	70,000
Meshed	85,000
Mosul	60,000
Resht	80,000
Tabriz	180,000
Teheran	240,000
Union of Soviet Socialist Republics	
Baku	452,808
Irkutsk	98,964
Novo-Sibirsk	120,701
Omsk	161,615
Samarkand	105,206
Sverdlovsk	136,404
Tashkent	323,613
Tiflis	292,973
Vladivostok	107,977

AFRICA

Alexandria	573,063
Algiers	226,218
Cairo	1,064,567
Cape Town	212,997
Casablanca	106,608
Durban	151,642
Johannesburg	288,131
Marrakesh	149,263
Oran	150,301
Port Said	104,603
Tunis	185,996

AUSTRALIA AND NEW ZEALAND

Australia	
Adelaide	327,686
Brisbane	295,430
Hobart	52,600
Melbourne	975,160
Newcastle	102,550
Perth	159,778
Sydney	1,101,190
New Zealand	
Auckland	206,810
Christchurch	123,370
Dunedin	84,060
Wellington	130,120

AREA AND POPULATION OF STATES AND POSSESSIONS OF THE UNITED STATES

POPULATION ACCORDING TO LATEST ESTIMATES (BUREAU OF THE CENSUS)

	SQ. MILES	POPULATION		SQ. MILES	POPULATION		SQ. MILES	POPULATION
Alabama	51,998	2,573,000	Michigan	57,980	4,591,000	Tennessee	42,022	2,502,000
Arizona	113,956	474,000	Minnesota	84,682	2,722,000	Texas	265,896	5,487,000
Arkansas	53,335	1,944,000	Mississippi	46,865	1,790,618*	Utah	84,990	531,000
California	158,297	4,556,000	Missouri	69,420	3,523,000	Vermont	9,564	352,428*
Colorado	103,948	1,090,000	Montana	146,997	548,889*	Virginia	42,627	2,575,000
Connecticut	4,965	1,667,000	Nebraska	77,520	1,408,000	Washington	69,127	1,587,000
Delaware	2,370	244,000	Nevada	110,690	77,407*	West Virginia	24,170	1,724,000
District of Columbia	70	552,000	New Hampshire	9,341	456,000	Wisconsin	56,066	2,953,000
Florida	58,666	1,411,000	New Jersey	8,224	3,821,000	Wyoming	97,914	247,000
Georgia	59,265	3,203,000	New Mexico	122,634	396,000			
Idaho	83,888	546,000	New York	49,204	11,550,000	POSSESSIONS		
Illinois	56,665	7,396,000	North Carolina	52,426	2,938,000	Alaska	590,884	60,000
Indiana	36,354	3,176,000	North Dakota	70,837	641,192†	Guam	210	16,938
Iowa	56,147	2,428,000	Ohio	41,040	6,826,000	Hawaii	6,449	311,900
Kansas	82,158	1,835,000	Oklahoma	70,057	2,426,000	Panama Canal Zone	527	27,624
Kentucky	40,598	2,553,000	Oregon	96,699	902,000	Philippine Islands	115,026	11,921,600
Louisiana	48,506	1,950,000	Pennsylvania	45,126	9,854,000	Porto Rico	3,435	1,459,000
Maine	33,040	795,000	Rhode Island	1,248	716,000	American Samoa	77	8,903
Maryland	12,327	1,616,000	South Carolina	30,989	1,864,000	Virgin Islands	132	26,051
Massachusetts	8,266	4,290,000	South Dakota	77,615	704,000			

CITIES IN THE UNITED STATES HAVING 100,000 OR MORE PEOPLE

LATEST ESTIMATES (BUREAU OF THE CENSUS)

	POPULATION		POPULATION		POPULATION		POPULATION
Akron, O.	208,435*	El Paso, Tex.	117,800	Minneapolis, Minn.	455,900	San Antonio, Tex.	218,100
Albany, N. Y.	120,400	Fall River, Mass.	134,300	Nashville, Tenn.	139,600	San Diego, Calif.	119,700
Atlanta, Ga.	255,100	Flint, Mich.	148,800	Newark, N. J.	473,600	San Francisco, Cal.	585,300
Baltimore, Md.	830,400	Fort Wayne, Ind.	105,300	New Bedford, Mass.	119,539†	Scranton, Pa.	144,700
Birmingham, Ala.	222,400	Fort Worth, Tex.	170,600	New Haven, Conn.	187,900	Seattle, Wash.	383,200
Boston, Mass.	799,200	Grand Rapids, Mich.	164,200	New Orleans, La.	429,400	Somerville, Mass.	102,700
Bridgeport, Conn.	143,555*	Hartford, Conn.	172,300	New York, N. Y.	6,017,500	Spokane, Wash.	109,100
Buffalo, N. Y.	555,800	Houston, Tex.	160,062	Norfolk, Va.	184,200	Springfield, Mass.	149,800
Cambridge, Mass.	125,800	Indianapolis, Ind.	382,100	Oakland, Calif.	274,100	Syracuse, N. Y.	199,300
Camden, N. J.	135,400	Jacksonville, Fla.	140,700	Omaha, Nebr.	222,800	Tacoma, Wash.	110,500
Canton, O.	116,800	Jersey City, N. J.	324,700	Paterson, N. J.	144,900	Tampa, Fla.	113,400
Chicago, Ill.	3,157,400	Kansas City, Kans.	118,300	Philadelphia, Pa.	2,064,200	Toledo, O.	313,200
Cincinnati, O.	413,700	Kansas City, Mo.	391,000	Pittsburgh, Pa.	673,800	Trenton, N. J.	139,000
Cleveland, O.	1,010,300	Knoxville, Tenn.	105,400	Portland, Oreg.	278,002	Tulsa, Okla.	170,500
Columbus, O.	299,000	Los Angeles, Calif.	1,427,500	Providence, R. I.	286,300	Utica, N. Y.	104,200
Dallas, Tex.	217,800	Louisville, Ky.	329,400	Reading, Pa.	115,400	Washington, D. C.	552,000
Dayton, O.	184,500	Lowell, Mass.	110,296†	Richmond, Va.	194,400	Wilmington, Del.	128,500
Denver, Colo.	294,200	Lynn, Mass.	105,500	Rochester, N. Y.	328,200	Worcester, Mass.	197,600
Des Moines, Ia.	151,900	Memphis, Tenn.	190,200	St. Louis, Mo.	848,100	Yonkers, N. Y.	121,300
Detroit, Mich.	1,378,900	Miami, Fla.	156,700	St. Paul, Minn.	248,100	Youngstown, O.	174,200
Duluth, Minn.	116,800	Milwaukee, Wis.	544,200	Salt Lake City, Utah	138,000		

CITIES IN OTHER COUNTRIES OF THE AMERICAS HAVING 100,000 OR MORE PEOPLE

Argentina		
	Buenos Aires	2,000,000
	Córdoba	140,000
	La Plata	150,000
	Rosario	250,000
	Santa Fe	150,000
	Tucumán	100,000
Bolivia		
	La Paz	110,000
Brazil		
	Belem	236,500
	Recife	239,000
	Rio de Janeiro	1,715,362
	Porto Alegre	179,500
	São Paulo	579,000
	São Salvador	284,000
Canada		
	Hamilton	120,945
	Montreal	684,500
	Ottawa	119,254
	Quebec	126,000
	Toronto	556,691
	Vancouver	117,217
	Winnipeg	191,356
Central America		
	Guatemala	115,938
Chile		
	Santiago	507,500
	Valparaiso	183,000
Colombia		
	Bogotá	166,167
Ecuador		
	Guayaquil	100,000
Mexico		
	Guadalajara	140,000
	Mexico	906,063
	Puebla	110,000
Peru		
	Lima	177,000
Uruguay		
	Montevideo	418,000
Venezuela		
	Caracas	135,253
West Indies		
	Habana	580,946
	Port au Prince	125,000

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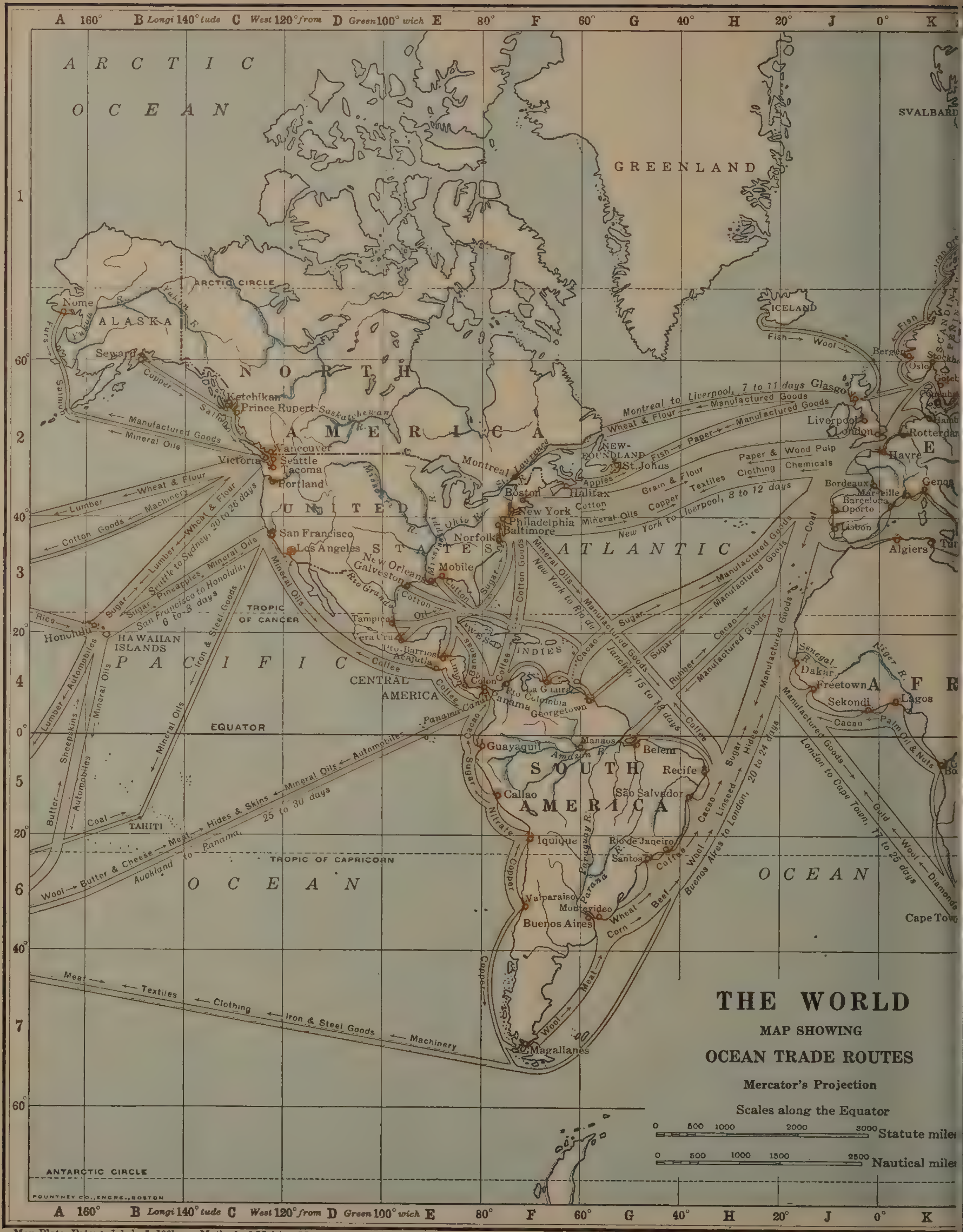
* 1920 census. † 1925 state census.


A 160° B Longi 140° tude C West 120° from D Green 100° wich E 80° F 60° G 40° H 20° J 0° K
ARCTIC OCEAN
GREENLAND
SVALBARD
ICELAND
Fish → Wool
ARCTIC CIRCLE
Nome
ALASKA
Yukon R.
Seward
Furs
Salmon
Copper
Ketchikan
Prince Rupert
Saskatchewan R.
NORTH AMERICA
Manufactured Goods
Mineral Oils
Vancouver
Victoria
Seattle
Tacoma
Portland
Montreal
St. Lawrence
NEWFOUNDLAND
St. Johns
Halifax
Boston
New York
Philadelphia
Baltimore
Norfolk
Montreal to Liverpool, 7 to 11 days
Wheat & Flour
Manufactured Goods
Glasgow
Liverpool
London
Rotterdam
Havre
Bergen
Oslo
Fish
Iron Ore
Paper
Apples
Grain & Flour
Textiles
Clothing
Paper & Wood Pulp
Chemicals
Cotton
Mineral Oils
Copper
New York to Liverpool, 8 to 12 days
Bordeaux
Marseille
Barcelona
Oporto
Lisbon
Genoa
Algiers
Coal
Lumber
Wheat & Flour
Machinery
Cotton Goods
Lumber
Seattle to Sydney, 20 to 26 days
Mineral Oils
Pineapples
Sugar
San Francisco to Honolulu, 6 to 8 days
UNITED STATES
Missouri R.
Mississippi R.
Ohio R.
San Francisco
Los Angeles
New Orleans
Galveston
Mobile
Rio Grande
ATLANTIC
Mineral Oils
New York to Rio de Janeiro, 15 to 18 days
Cotton Goods
Sugar
Manufactured Goods
TROPIC OF CANCER
Rice
Honolulu
HAWAIIAN ISLANDS
Iron & Steel Goods
Tampico
Vera Cruz
Pto. Barrios
Acajutla
Coffee
Lumber
Bananas
WEST INDIES
Cacao
CENTRAL AMERICA
Colon
Panama
La Guaira
Pto. Colombia
Georgetown
Panama Canal
PACIFIC
Lumber
Automobiles
Sheepskins
Mineral Oils
Butter
Coal
EQUATOR
Guayaquil
Amazon R.
Manaos
Belem
Recife
SOUTH AMERICA
Callao
Sao Salvador
Sugar
Nitrate
Iquique
Rio de Janeiro
Santos
Coffee
Paraguay R.
Parana R.
Valparaiso
Montevideo
Buenos Aires
Copper
Wheat
Corn
Beef
Wool
Meat
Magallanes
Mineral Oils ← Automobiles
Hides & Skins
Meat
25 to 30 days
TAHITI
Wool → Butter & Cheese
Auckland to Panama
TROPIC OF CAPRICORN
OCEAN
Hides
Linseed
Cacao
Buenos Aires to London, 20 to 24 days
Rubber
Senegal R.
Dakar
Niger R.
Freetown
Sekondi
Lagos
AFR
Palm Oil & Nuts
Manufactured Goods
London to Cape Town, 17 to 25 days
Gold
Wool
Diamonds
Cape Town
Meat → Textiles Clothing Iron & Steel Goods Machinery
ANTARCTIC CIRCLE
1 2 3 4 5 6 7
60° 40° 20° 0° 20° 40° 60°
0 500 1000 2000 3000 Statute miles
0 500 1000 1500 2500 Nautical miles
POUNTNEY CO., ENGRS., BOSTON

THE WORLD

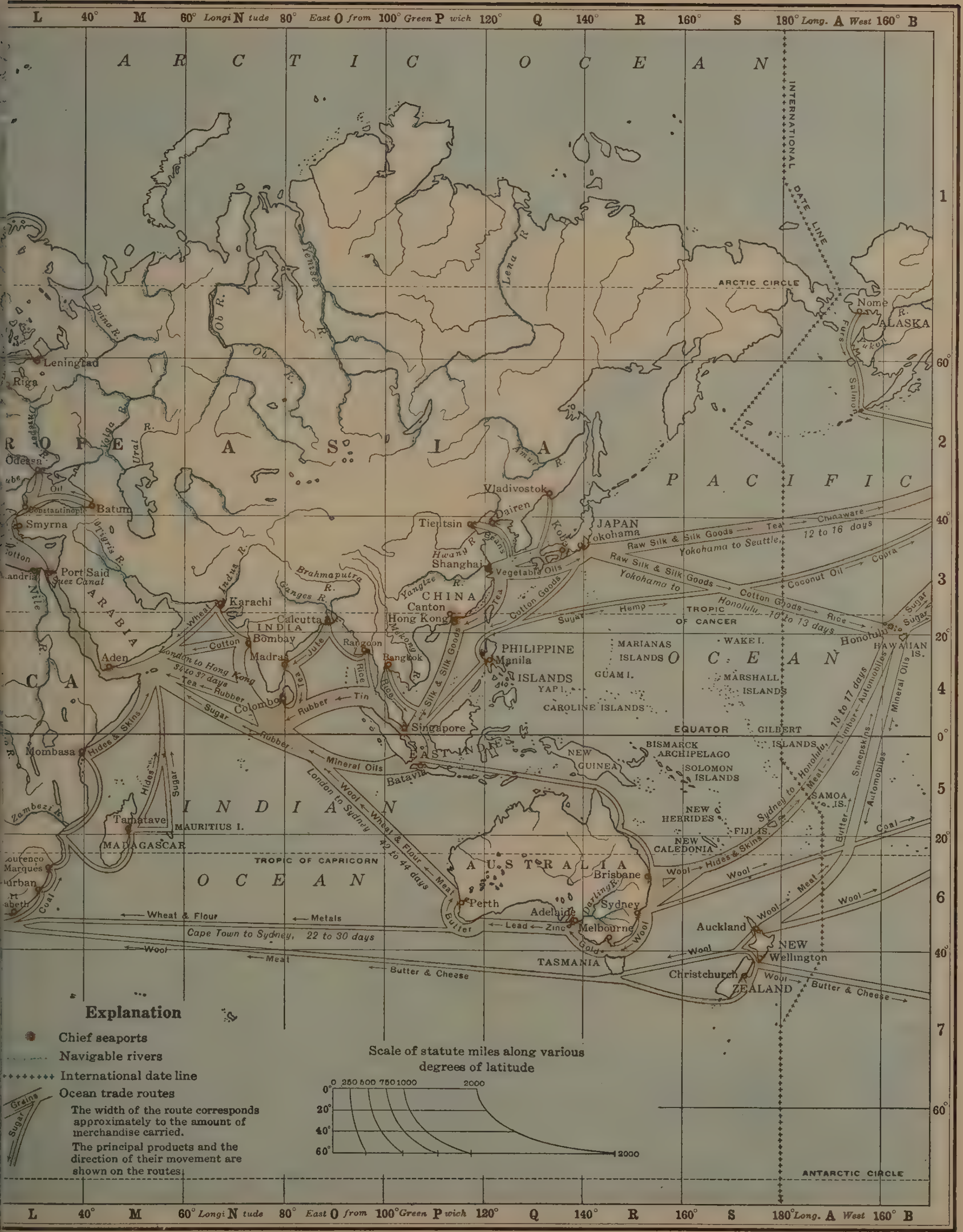
MAP SHOWING

OCEAN TRADE ROUTES

Mercator's Projection

Scales along the Equator

Map Plate, Patented July 5, 1921 · Method of Making Maps, Patented July 5, 1921


L 40° M 60° Longi N tude 80° East O from 100° Green P wich 120° Q 140° R 160° S 180° Long. A West 160° B
ARCTIC OCEAN
INTERNATIONAL DATE LINE
ARCTIC CIRCLE
ASIA
PACIFIC OCEAN
INDIAN OCEAN
ARABIA
INDIA
CHINA
JAPAN
PHILIPPINE ISLANDS
EAST INDIES
AUSTRALIA
NEW ZEALAND
TASMANIA
MADAGASCAR
ALASKA
HAWAIIAN IS.
TROPIC OF CANCER
EQUATOR
TROPIC OF CAPRICORN
ANTARCTIC CIRCLE
Leningrad
Riga
Odessa
Batum
Constantinople
Smyrna
Port Said
Suez Canal
Alexandria
Aden
Karachi
Bombay
Calcutta
Madras
Colombo
Rangoon
Bangkok
Singapore
Batavia
Hong Kong
Canton
Shanghai
Tientsin
Dairen
Vladivostok
Kobe
Yokohama
Manila
Nome
Honolulu
Mombasa
Tamatave
Lourenço Marques
Durban
Port Elizabeth
Perth
Adelaide
Melbourne
Sydney
Brisbane
Auckland
Wellington
Christchurch
MARIANAS ISLANDS
GUAM I.
YAP I.
CAROLINE ISLANDS
WAKE I.
MARSHALL ISLANDS
GILBERT ISLANDS
BISMARCK ARCHIPELAGO
NEW GUINEA
SOLOMON ISLANDS
NEW HEBRIDES
NEW CALEDONIA
FIJI IS.
SAMOA IS.
MAURITIUS I.
Dvina R.
Ob R.
Yenisei R.
Lena R.
Amur R.
Volga R.
Ural R.
Dnieper R.
Tigris R.
Nile R.
Indus R.
Ganges R.
Brahmaputra R.
Hwang R.
Yangtze R.
Mekong R.
Zambezi R.
Darling R.
Yukon R.
Raw Silk & Silk Goods
Tea
Chinaware
Yokohama to Seattle, 12 to 16 days
Yokohama to Honolulu, 10 to 13 days
Cotton Goods
Rice
Coconut Oil
Copra
Sugar
Hemp
Vegetable Oils
Beans
London to Hong Kong 34 to 37 days
London to Sydney 42 to 44 days
Cape Town to Sydney, 22 to 30 days
Sydney to Honolulu, 13 to 17 days
Wheat
Cotton
Jute
Oil
Rubber
Tin
Silk & Silk Goods
Hides & Skins
Mineral Oils
Wool
Wheat & Flour
Meat
Butter
Lead
Zinc
Gold
Metals
Butter & Cheese
Coal
Lumber
Automobiles
Sheepskins
Furs
Salmon
1 2 3 4 5 6 7
60° 40° 20° 0° 20° 40° 60°
Explanation
● Chief seaports
Navigable rivers
International date line
Ocean trade routes
Grains
Sugar
The width of the route corresponds approximately to the amount of merchandise carried.
The principal products and the direction of their movement are shown on the routes.
Scale of statute miles along various degrees of latitude
0 250 500 750 1000 2000
0° 20° 40° 60°
2000

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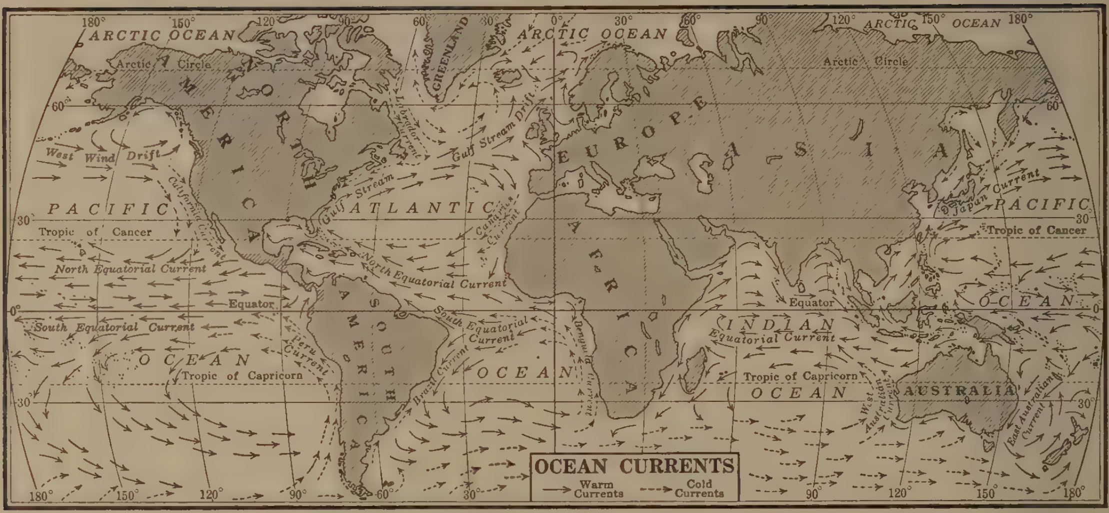
ARCTIC OCEAN
Arctic Circle
West Wind Drift
PACIFIC
Tropic of Cancer
North Equatorial Current
Equator
South Equatorial Current
OCEAN
Tropic of Capricorn
Peru Current
GREENLAND
Gulf Stream
ATLANTIC
North Equatorial Current
South Equatorial Current
OCEAN
EUROPE
ASIA
AFRICA
INDIAN
Equatorial Current
Tropic of Capricorn
OCEAN
Japan Current
PACIFIC
OCEAN
AUSTRALIA
OCEAN CURRENTS
Warm Currents
Cold Currents
180°
150°
120°
90°
60°
30°
0°

A map of the world showing ocean currents.

A LIST OF BOOKS FOR OUTSIDE READING

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Mockler-Ferryman, A. F., and Thomson, M. Pearson. Norway and Denmark. The Macmillan Company.

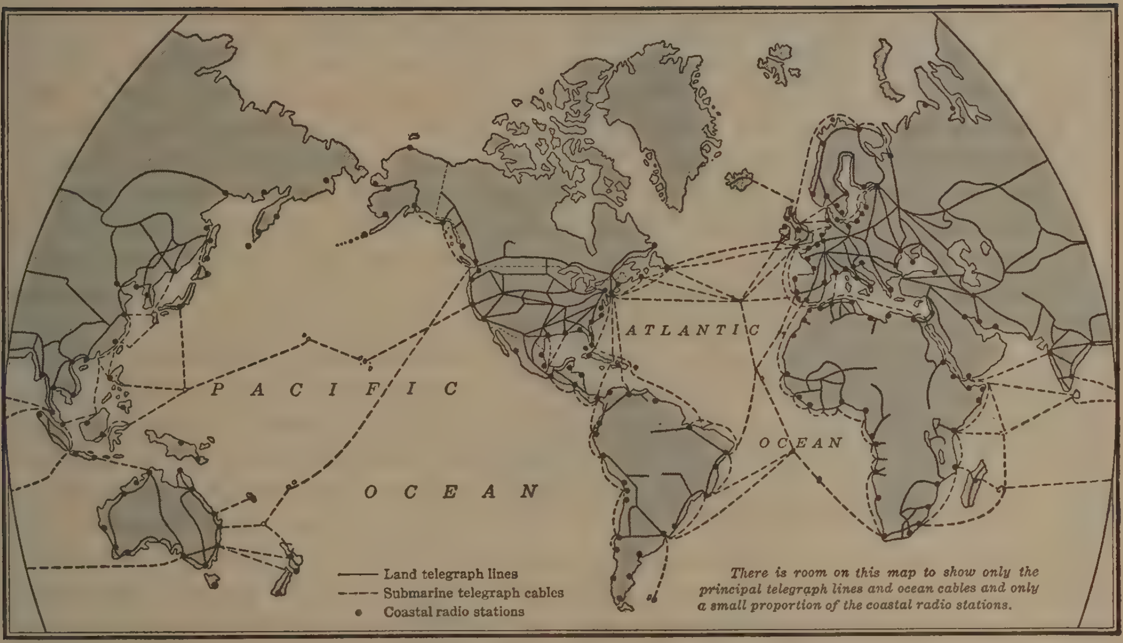
Roosevelt, Theodore. African Game Trails. The Century Company.

Scott, Evelyn and C. Kay. In the Endless Sands (Sahara Desert). Little, Brown and Company.

Towle, George M. Marco Polo, his Travels and Adventures. Lothrop, Lee and Shepard.

Young, Ernest, and Norbury, Edward A. Siam. The Macmillan Company.

Redwoods of California



There is room on this map to show only the principal telegraph lines and ocean cables and only a small proportion of the coastal radio stations.

Figure 342. The network of lines of communication which bind together the different parts of the world.

THE UNITED STATES AMONG THE NATIONS

I. A FAVORED COUNTRY AND TIME

Foreword. As citizens of the United States of America it is important that we know the geography of our country and how we have come to be one of the strongest nations in the world. We are greatly indebted to the people who came from European countries and established this republic. We are fortunate in having good farm lands, extensive forests, large supplies of natural fuels, ample water power, and a wealth of iron, copper, and other metals. We are fortunate in having a large country which is not yet overcrowded, and in which we can produce most of the things we need. We should remember, however, that we use and enjoy many things that come to us from foreign lands.

No progressive nation can be isolated, or live apart from other nations, today. Messages continually come and go between the continents. Ships are constantly transporting people and cargoes. We have social, political, and business relations with the people in nearly every other country in the world. We live in a network of lines of communication which bind all peoples of the world together. *See Figure 342.*

In order to become intelligent citizens of this country it is necessary for us to know (1) what the people in the different parts of our own land are doing, (2) what we, as a nation, have to contribute to the world, (3) what we must have from other countries, (4) how this nation has gained its great strength, and (5) what are our present international relations.

As you continue your study, be on the lookout for articles in the newspapers and magazines which tell of our coöperation with the people in other countries. Watch for up-to-the-minute information about our foreign trade and the importance of that trade to our home industries. All such information will enrich your year's work.

Perhaps you will hear, over the radio, friendly messages from people in other lands, or similar messages that we send to them. You may hear radio addresses bearing upon our international relations.

OUR NEIGHBORS

Across the Atlantic. Since the people who settled in the New World came chiefly from western Europe, we are closely bound to the civilization of that continent, where the people have made wonderful progress in music, art, literature, science, engineering, and government. Europe is only a little larger than the United States, but while we have about 120 million people in the United States there are 425 million in Europe.

The North Atlantic Ocean is crossed and recrossed by more ships than any other body of water on the earth. In addition to thousands of passengers, these ships carry huge quantities of freight and millions of letters every year.

Each year since colonial days we have sent more and more students to Europe to gain the advantage of study in another land, and now hundreds of students come from Europe to study in American colleges and universities. Scientists and teachers from both sides of the Atlantic meet in frequent conferences. In the capitals of the European countries and in many other large European cities, we have government representatives, giving us close political relations with the people living on the opposite side of the North Atlantic.

Across the Pacific. To the west of the United States across the great Pacific Ocean, in China and Japan, there are over 500 million people. The people of these countries, and of other parts of the Far East, have developed and maintained the Eastern, or as we often call it, the Oriental, civilization. In many ways that has been the most remarkable civilization on the earth. It has lasted longer than any other.

The history of the Orient dates back for at least six thousand years, over thirteen times as far back as the history of America. During that long period the Oriental people, who have lived more by themselves than the people of western Europe, have made important discoveries and learned many of the useful arts.

For a long time the people of the Orient were content to live by themselves; so they learned nothing of new inventions in Europe and America. But since about 1850 they have had more and more to do with the people of the Western nations. They have begun to use the railroad, the telegraph, the automobile, the airplane, and the radio, and to build large factories much like those in this country. Today many of the young people of those countries come to the Western world to study. We now have representatives in the chief cities of the Far East and we carry on a large trade with the Orient.

We are indeed fortunate in being located about midway between the two great centers of older civilization in the world as a whole, and in the midst of the younger countries of the New World.

The Dominion of Canada. North of the United States is a land with a wealth of resources which are being developed just as we are developing our resources. The southern portion of Canada is much like the northern part of the United States and the occupations of the people on the two sides of the international boundary line do not differ much. Many industrial firms in the United States have branches in Canada, and Canadian firms have branches in this country.

We sell many more goods to the Canadian people than to the people of any other country except Great Britain. Large numbers of visitors pass back and forth between the two countries, and trainloads of freight cross the border every day. The boundary between the United States and Canada is the longest political boundary in the world without military protection. No forts or soldiers are needed because the people of the two countries are friends and trust each other.

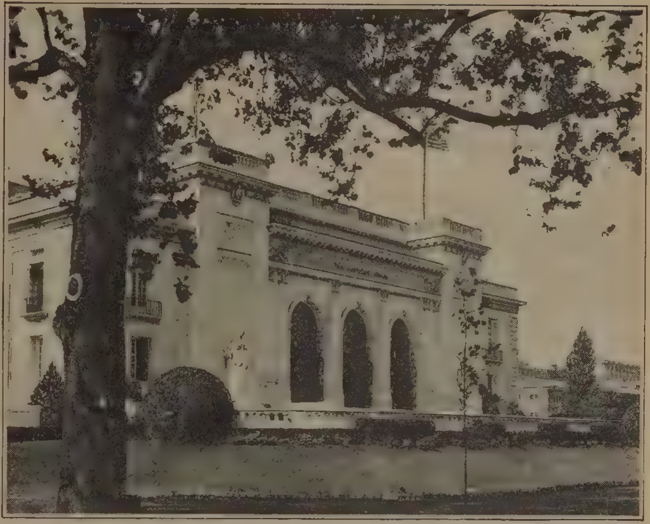

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Figure 343. The Pan American Union building in Washington. In this beautiful building are the offices of the Pan American Union and many interesting exhibits from Latin America.

Latin America. South of the United States are a number of sister republics which we group together and call "Latin America." In those countries there are remarkable opportunities for future growth. Many people have moved from the United States into Mexico, Central America, the West Indies, and South America, and made their homes in those lands. Business firms of the United States have invested large sums of money in the development of the farm lands and of the mines and oil wells in many of the Latin American countries.

North-south routes of trade have been established in the New World, and each year more and more goods are exchanged between the ports of the United States and those of Mexico, Central America, the West Indies, and South America. An international association called the Pan American Union, with headquarters in Washington, D. C., has been formed to help to maintain friendly relations between all the nations of the New World. This organization furnishes information to students, to travelers, and to business firms. *See Figure 343.*

OUR CLIMATE AND NATURAL RESOURCES

A favorable climate. The United States of America is fortunate in that it is located in a part of the earth where the climate is neither too cold nor too hot. The Far North is so cold that few people can live there, and Antarctica, in the Far South, is so cold that it is uninhabited. In the exceedingly hot parts of the world white people are not able to work very hard. They may live there for a few years to supervise some great work, but they miss the seasonal changes in weather that are so invigorating in the temperate zones.

The United States, with the exception of some of our island possessions and parts of Alaska, is within the north temperate zone. The growing season, which extends from the last killing frost of spring to the first killing frost of autumn, is so long in most parts of the country that we can produce huge crops of food each year.

We are especially fortunate in that a large proportion of our land receives ample rainfall for the growth of crops, for the dry parts of the world cannot grow enough food to support dense populations. An unwatered land can never be the home of a great nation.

A wealth of natural resources. The prosperity of a progressive nation depends in large part upon the (1) soils, (2) forests, (3) water power, and (4) mineral resources which it owns or controls.

When the first settlers came to this land from Europe no one knew that there were, in the interior of the continent, some of the best farm lands of the world, or that there were such extensive areas of valuable forests. No one knew that the largest coal fields on the earth were in this undeveloped country, or that vast supplies of natural oil and gas were in the ground. No one would have cared about the coal, the oil, or the gas at that time, for people did not know how to use them. No one knew how great the amount of water power was, or how valuable it would some day become, for few knew anything about electricity and no one guessed that it could be generated by the force of falling water. No one knew, in those early days, of the great wealth of iron, copper, gold, silver, lead, zinc, and other metal ores in this part of America.

The great natural wealth of our country has become more and more valuable as the population has increased and as great inventions have enabled us to make fuller and fuller use of the soils, the forests, the minerals, and the waters. *See Figures 344 and 345.*

AN AGE OF PROGRESS

Progress in science and engineering. As a people we have been fortunate in that, while we have been growing as a nation, wonderful means of manufacture and of transportation and communication have been invented. It is since the United States of America gained independence that the art of manufacturing steel has been discovered, that the steam engine has come into use, both at sea and on the land, that large farm implements and other machinery have been made, that the telegraph and cables have been perfected, and the telephone and radio have been invented. We have grown up just at the time when railroads and automobiles, airships and airplanes, have come into use. Never in the history of the world has there been such a period of advancement in science and engineering as in the last hundred years.

Progress in transportation and communication. We live today in the midst of a great web of lines of transportation and communication which bind the peoples of the world together in their business and social relations. The postal service takes letters, cards, and packages from our homes to almost any part of the world where other people live. Railways and automobiles make travel easy on the land. Steamships cross and recross the oceans with remarkable regularity, and airplanes are fast coming into use in nearly all parts of the world. Electric waves are passing through the air bringing to us music, weather reports, and news from various parts of the world through our radios. The cables that rest on the ocean bottoms, and the wires of the telephone and telegraph systems, all help to make this great world-wide web of communication in which we live.

Some things to prove. Give all the facts you can to prove that

1. The United States has a remarkably favorable location in the world.
2. The climate of our country plays an important part in our prosperity.
3. Our soils and forests are of great value to us.
4. Our fuels and metals from beneath the ground are of great importance to us.
5. Our rivers are useful in many ways.

A list to make. Make as long a list as you can of the inventions which have helped to increase the comfort and prosperity of the people of our country.

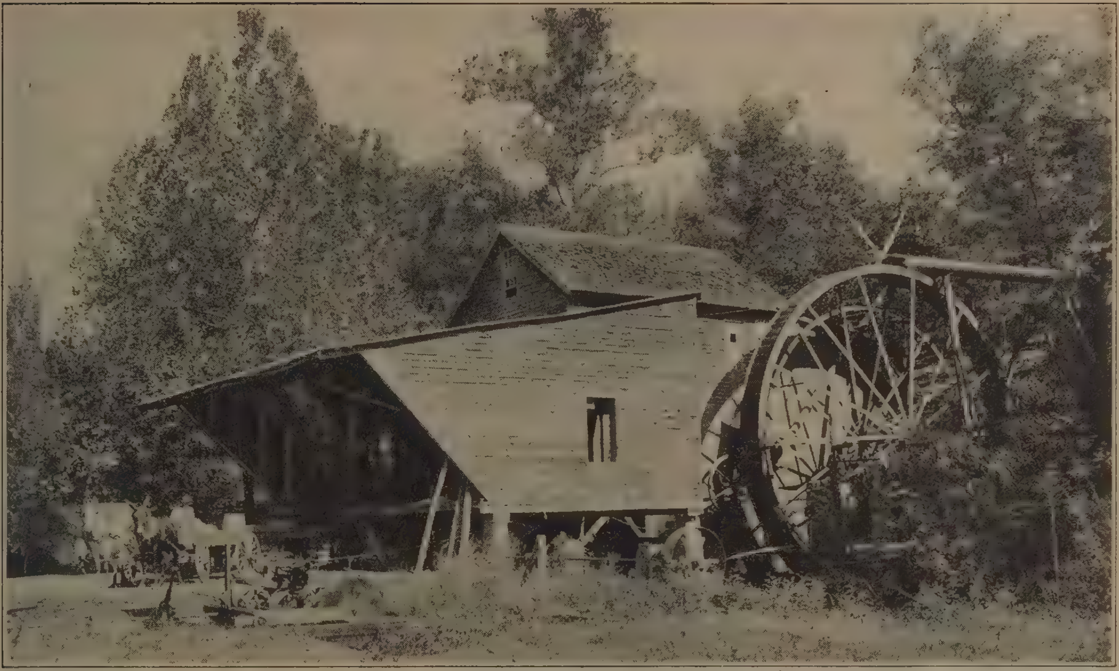

Figure 344. The old-time use of water power. Mills like this, used chiefly for grinding wheat and corn and sawing lumber, were common in the settled parts of our country for many years. This one is still in use. The power which turns the big mill wheel is furnished by water which pours out of the pipe at the right.

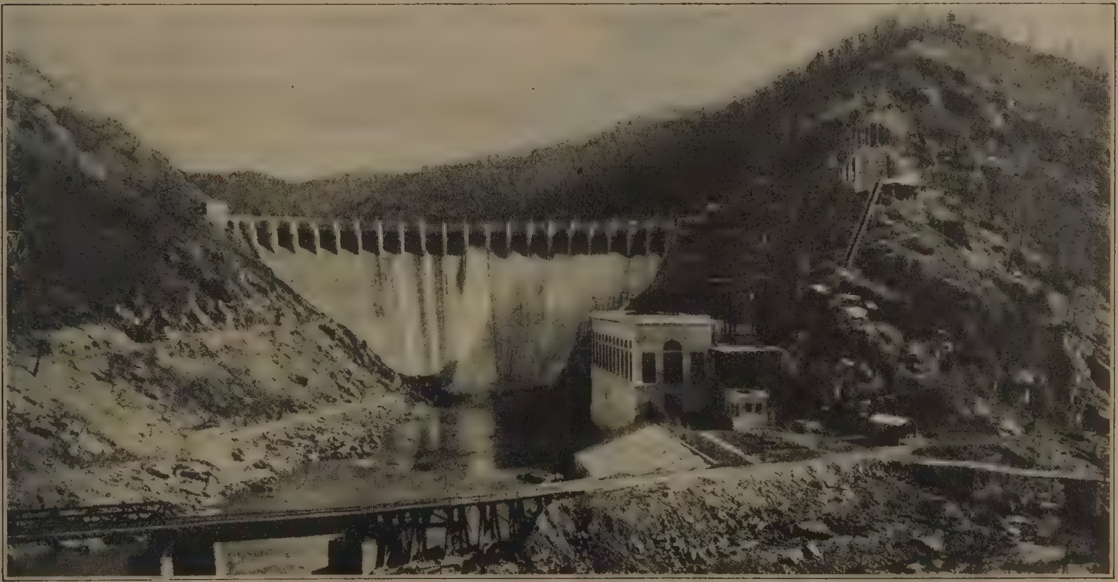

Figure 345. A modern plant for generating electricity from water power. The dam holds back the waters of the stream, giving them a greater fall, and the electricity is generated in the power plant at a lower level. From the power plant the electricity can be sent over wires to mills and factories which are many miles away.

II. THE PEOPLE WHO FOUNDED AND DEVELOPED THE NEW NATION

Foreword. People from every nation in Europe and from many other nations have come to live in the United States. For the first one hundred and fifty years most of the people remained near the Atlantic seaboard. Then began a period of westward expansion when brave and adventurous pioneers crossed the Appalachian Highlands into the broad, rolling prairies of the Mississippi Valley. Later other daring people started across the Great Plains. Some found their way through the Rocky Mountains, then across the semiarid lands of the plateau regions, and finally to the borders of the Pacific Ocean.

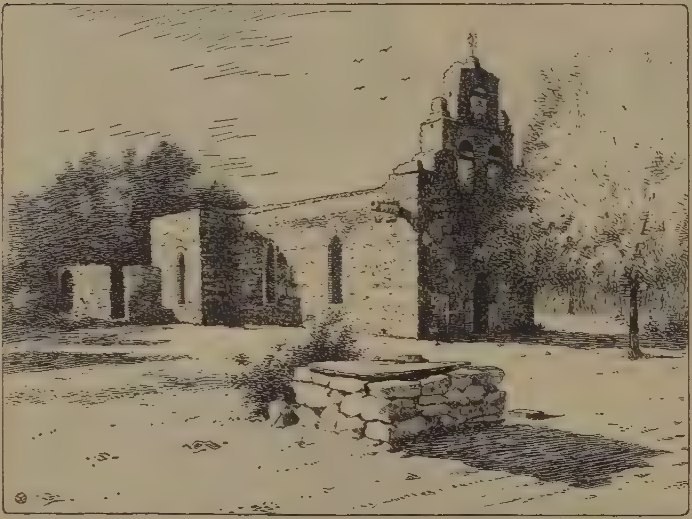

Figure 346. The Mission San Francisco de la Espada, near San Antonio, Texas. This church was built by the Spanish in 1690, and is the oldest of all the missions in Texas.

As you read further try to find out:

1. What attracted the early settlers from Europe to this country.
2. Why, in time, so many settlers moved westward.
3. How the number of our states gradually increased from thirteen to forty-eight.
4. How we gained our outlying possessions.

1. The Explorers and Early Settlers

As you know, Christopher Columbus discovered America in searching for a westward route across the Atlantic Ocean to India. His discoveries in the New World, which he believed to be part of India, led many other Europeans to cross the Atlantic and explore the new-found lands. Do you know what groups of European people first explored and made settlements in the part of North America which in time was to become the United States?

The French. French explorers entered the Gulf of St. Lawrence and went far into the interior of North America by the water routes of the St. Lawrence River, the Great Lakes, and the Mississippi River system. It was some of these early French adventurers who placed the name Lachine Rapids on the map of the St. Lawrence River. That shows that they too thought they were on the way to Asia, for *Lachine Rapids* means "the China rapids." Many cities and towns in the Mississippi Valley have French names, reminding us of the days when the French missionaries and fur traders were the only white people in that region. Many people of French descent still live in the cities of the lower Mississippi Valley and in parts of eastern Canada. A large number of the people living on the banks of the St. Lawrence River below Quebec are directly descended from the early French settlers, and they speak the French language.

It is interesting to know that the French nation still holds possession of two small islands, Miquelon and St. Pierre, off the southern coast of Newfoundland near the mouth of the St. Lawrence River.

The Spanish. The Spanish, who in their early voyages to the New World commonly followed the southerly route which Columbus took across the Atlantic, settled chiefly in the West Indies and Mexico and in Central and South America. A few came into what is now Florida. Spanish missionaries established missions in what are now our states of California, Arizona, New Mexico, and Texas. In the southwestern part of our country there are many cities and towns with Spanish names, and many houses, churches, and other buildings resembling, in their style of architecture, the buildings of Spain. *See Figure 346.*

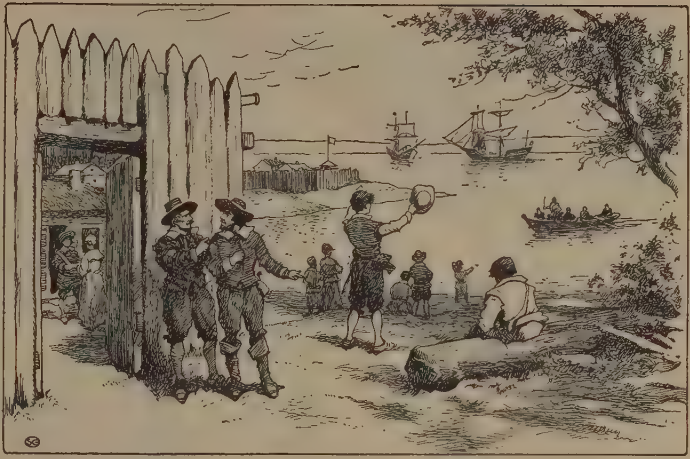

Figure 347. Jamestown, Virginia, the first successful English settlement in America. The settlement was made in 1607 on an island in the James River, and was surrounded by a stockade of stout logs for protection against attack by the Indians.

The English. The English people who first came to settle in the new land made their homes chiefly along the Atlantic coast from New England to Georgia. They came in larger numbers than did the French or Spanish, and in most cases brought their families with them, with the definite intention of making America their permanent home. *See Figure 347.*

Other nationalities. Dutch people first settled in the vicinity of the present city of New York. Germans came in large numbers into Pennsylvania, and the Swedes who came early settled in Delaware. There were many settlers of Scotch descent, some Scotch-Irish, some Irish, and some French who joined with the English, German, and Dutch settlers in making up the population of the colonies along the Atlantic coast. Later these colonies became the thirteen original states represented by the thirteen stars and stripes on the first American flag, and by the thirteen stripes on the American flag of today.

What the first census showed. The first American census was taken in 1790, and from that we learn that 82 per cent of the population in the new nation were of English descent, 7 per cent were Scotch, and the rest were German, Dutch, Irish, Swedish, or French. English was the common language of the new nation, and it was clear that the habits and customs of the people were chiefly English.

Namesakes. Many of the cities and towns in our Eastern states are namesakes of places in the countries of northwestern Europe from which the early settlers came. Below is a list of some of these namesakes. On the map on pages 22–23 find the places after which they were named.

Amsterdam, N.Y.
Belfast, Me.
Birmingham, Ala.
Cambridge, Mass.
Chester, Pa.
Dover, Del.
Gloucester, Mass.
Greenwich, Conn.
Hull, Mass.
Jersey City, N.J.
Londonderry, N.H.
Manchester, N.H.
New London, Conn.
Plymouth, Mass.
Portsmouth, N.H.
York, Pa.

Finding reminders. From the map on pages 358–359 make a list of names of places, rivers, and mountains which are reminders of the fact that the Spanish were the first Europeans to explore the southwestern part of our country.

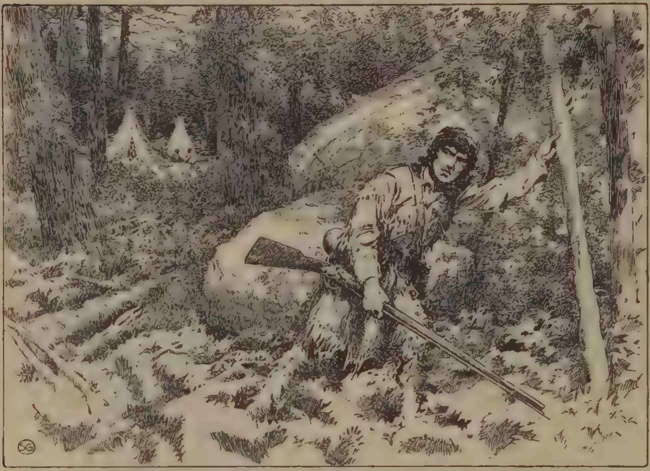

Figure 348. Daniel Boone. This famous pioneer had many thrilling adventures in the wilderness.. Here he is shown escaping from Indians who had held him captive for several months.

2. A CENTURY OF NATION BUILDERS

1790–1890

For a hundred years after George Washington was elected president of the United States most of the people who helped to build our nation were descendants of the early settlers or people from the same countries of northwestern Europe from which the settlers had come. They were people of great determination, who bravely bore the hardships of pioneer life as they pushed westward into the unsettled lands. Remember that in the early days of westward expansion there were no railroads and but few wagon roads. The pioneers traveled on foot, or with horses or ox teams that drew their heavy covered wagons, or in crudely made boats on the rivers. The routes that many of them followed are shown on the map of the United States on pages 358–359. Try to follow those routes in imagination as you read about the westward migration.

A century of progress. In 1790 there were 3,929,214 people in this country, and in 1890 there were 62,947,714, or sixteen times as many. That was a century of wonderful progress. The nation had become exceedingly prosperous because of the great natural wealth and the favorable climate of this part of the earth. White men had not lived here before, and during all the years when only the Indians occupied the land the rich soils, valuable forests, and great resources in the ground had remained almost untouched.

By 1890 much of the forested land had been cleared for farms; the prairies were producing immense crops of food; steamships had come into use; iron, copper, lead, zinc, gold and silver, coal, oil, and gas had been discovered in large quantities; railroads had been built; farm machinery had come into use; the telegraph and the telephone had been invented; and the best lands from the Atlantic to the Pacific Ocean had been settled.

Our debt to the founders of the nation. The groups of people who came from the different European countries each made important contributions to the life of the new nation. There were business men, skilled workmen, lawyers, doctors, ministers, and artists among those who came to make this land their home. Nearly all the trades and many of the professions were represented among those nation builders. We who live in the United States today are greatly indebted to the people who founded our nation for all they did in working out the plans for the government, for the freedom of the different churches, and for the finest system of public schools, colleges, and universities in the world.

The Great Westward Migrations

The migration into the Mississippi Valley. The original thirteen states were on the Atlantic seaboard, and in 1790 most of the people in this country lived east of the Appalachian Mountains. Figure 352 shows the distribution of population at that time. What reasons can you suggest for the fact that so few people had moved inland?

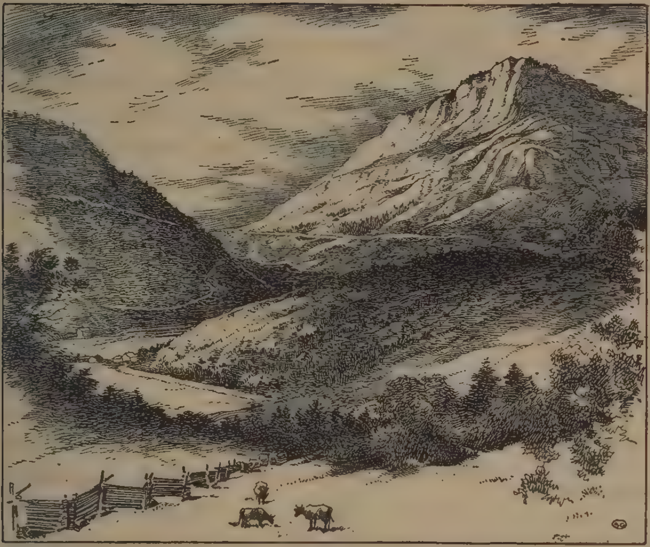

Figure 349. Cumberland Gap. Through this famous gap in the Allegheny Mountains wound the trail over which many groups of pioneer settlers made their way into the plains of Kentucky.

Among the colonists there were many daring fellows who wanted to explore the wilderness to the west of the Appalachians. As early as 1769 Daniel Boone had blazed a trail southwestward between the ridges of the Appalachian Mountains in Virginia and through the Cumberland Gap to the valley of the Kentucky River, and in 1775 he led a band of settlers into Kentucky. *See Figures 348 and 349.*

Other brave pioneers pushed westward from Philadelphia and Baltimore by routes that joined at Pittsburgh. There the adventurers who were advancing into the unknown western country built boats or barges and drifted down the Ohio River. *See Figure 350.*

At the north was the easiest natural route to the West. It ran northward, following the Hudson River to a point near Albany, then westward through the valley of the Mohawk River and along the lowland plain south of Lake Ontario to the present site of Buffalo. From Buffalo the pioneers had a choice of two routes to the West. Some followed the south shore of Lake Erie, traveling over the narrow strip of low, level land which was formerly under the lake waters. The trails, and later the roads, ran along old beach levels made by the waters of Lake Erie. Today many of the highways follow these same routes.

The other route westward from Buffalo was by water, and by this route the pioneers could reach the shores of Lakes Erie, Huron, and Michigan without much trouble. Many found places that they liked along these shores, and here they stopped and established settlements. The rapids between Lake Superior and Lake Huron made it difficult to explore the largest and most westerly of the Great Lakes.

Pioneer hunters and farmers. As the great wave of migration continued, thousands of pioneers went westward into the Mississippi Valley along these various routes. The hunters and trappers often had their families with them and they made little clearings in the forests, built log cabins, and soon had little garden patches where vegetables were raised.

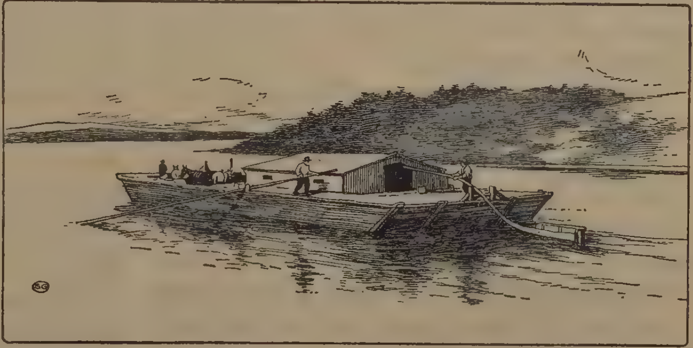

Figure 350. A pioneer flatboat. In boats like this pioneer families, with their household goods and their live stock, floated down the Ohio River in search of favorable spots for settlement.

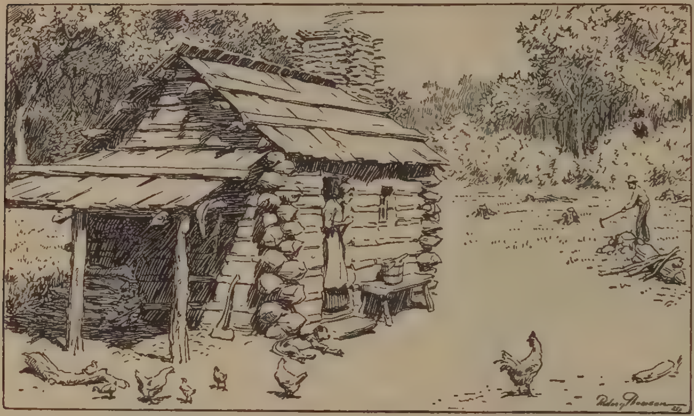

Figure 351. A pioneer cabin in the wilderness. The first cabins were built of logs. After the settlers had cleared enough land to make a living by farming, they built larger and better houses.

"In the vanguard was the man with the rifle — grim, silent, and fearless. He loved the pathless forest, dense and solitary, carpeted by the fallen leaves of a thousand years and fretted by the sunlight that poured through the Gothic arches of the trees, where the wild beast slunk through the shadows, where the occasional crash of a falling branch boomed like thunder, and where the campfire at night flared up into the darkness of knitted boughs."[1]

Next came the man with a plow. He wanted more land for farming. Therefore he felled more trees, and he commonly built a much better house than the hunter. Later, as the farmers became more numerous, they established villages and built churches and schools. *See Figure 351.*

New states. By the end of the year 1821, six new states had been carved out of the great wilderness west of the Appalachian Mountains and in the central part of the Mississippi Valley: Kentucky, Tennessee, Ohio, Indiana, Illinois, and Missouri. These states had within their borders some of the richest farm lands in America, and at first nearly all the settlers were farmers. It was not long, however, before discoveries of coal and of iron and other metal ores encouraged some of the settlers to begin manufacturing.

During the same period of thirty-one years (1790–1821) five other states were admitted to the Union: Vermont and Maine in New England, and Louisiana, Mississippi, and Alabama in the South. Study Figure 352 for the distribution of people in 1820.

Figure 352 shows that as early as 1820 there were a few people living west of the Mississippi River in Missouri. St. Louis, near the junction of the Missouri and Mississippi rivers, had been a fur-trading center since 1764, and from there groups of pioneers moved westward and made settlements along the lower course of the Missouri.

A study of the trails across the Appalachians. Use the map on pages 358–359 to study the early trails across the Appalachian Mountains.

1. Trace the trail which led from Richmond, Virginia, through Cumberland Gap to the Ohio River. 2. What city of today is located where that trail ended? 3. How could the pioneers make their way from that point to the mouth of the Missouri River?

4. Trace the trails which crossed the Appalachians, meeting at Pittsburgh. 5. At what Eastern cities did those trails begin? 6. How many of the states admitted to the Union between 1790 and 1821 border the Ohio River?

7. Trace the northernmost of the early trails across the Appalachian Highlands. 8. What great city is located where that trail began? 9. Prove by the map that that trail was an easier one for the pioneers than the trails farther south.

10. What statements can you make from the study of the map and from what you have learned in the text to prove that the early trails from the Atlantic coast to the Mississippi Valley followed rivers as much as possible?

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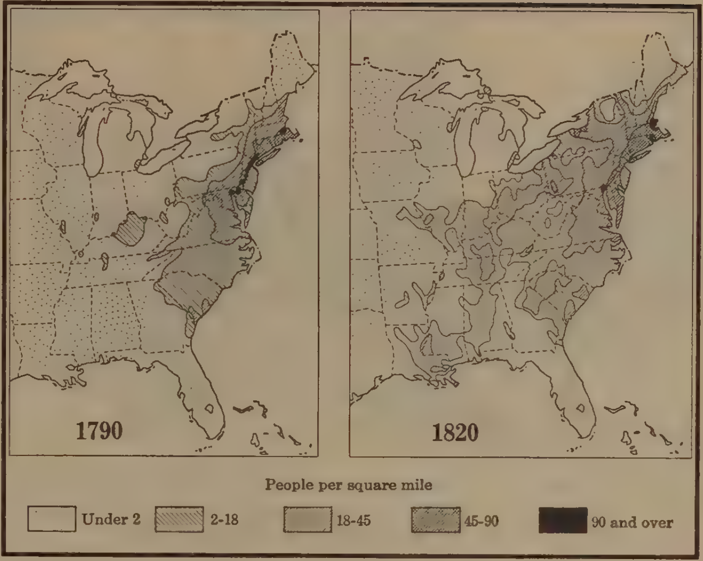
[1] Beard, Charles A. and Mary R., "The Rise of American Civilization." Permission of The Macmillan Company.

The migration to the Far West. In 1804 Captain Meriwether Lewis and Captain William Clark set out from St. Louis to explore the wilderness of the Northwest. They followed the Missouri River northwestward, crossed the Rocky Mountains, and then followed the Snake and Columbia rivers to the Pacific coast. On their return in 1806 their reports of the wealth of resources in the Northwest fired many an adventurer with the desire to seek his fortune beyond the Rockies.



Adapted from Goode's School Atlas

Figure 352. **Maps showing the distribution of people in the United States in 1790 and 1820. Compare the two maps carefully, noting the westward and southward expansion of population.**

The Lewis and Clark expedition, however, was not followed immediately by a great migration to the Northwest, partly because the long trip across the Great Plains and the western mountains and plateaus meant such terrible hardships, and partly because the British disputed our claim to the region. In time, however, settlements were made in the Northwest, and in 1846 what was known as the Oregon Country became part of the United States. It included what are now our states of Washington, Oregon, and Idaho, and parts of western Montana and Wyoming.

A year later, in 1847, the Mormons founded their settlement of Salt Lake City in what was to become the state of Utah. By that time, also, a few pioneers had made their way into California, which, until 1848, belonged to Mexico.

The California gold rush. In 1848 gold was discovered in the stream gravels of California, and this brought about one of the greatest human stampedes in history. The gold was discovered by a carpenter who was working at a sawmill on a branch of the American River for John A. Sutter. Mr. Sutter tried to keep the discovery a secret, but that was impossible. The report spread rapidly, and by the end of the year it had reached the East. Men in all parts of the United States and in distant parts of the world dropped the work they were doing and joined in the great rush to California, each and every one hoping to make his fortune in the gold fields.

Some of the fortune hunters crossed the Great Plains and the Rocky Mountains, worked their way across the broad desert plateaus between the Rockies and the Sierra Nevada, climbed the east face of the Sierras, and descended into the valleys and lowlands of the California region. Some sailed southward, crossed the Isthmus of Panama, and then took boats northward to San Francisco. Others went all the way from the Atlantic seaboard to California by boat. They had to go around Cape Horn and northward along the west coast of South America, Central America, and Mexico before they came to the land of gold, where everyone expected to become wealthy. *See Figures 353 and 354.*

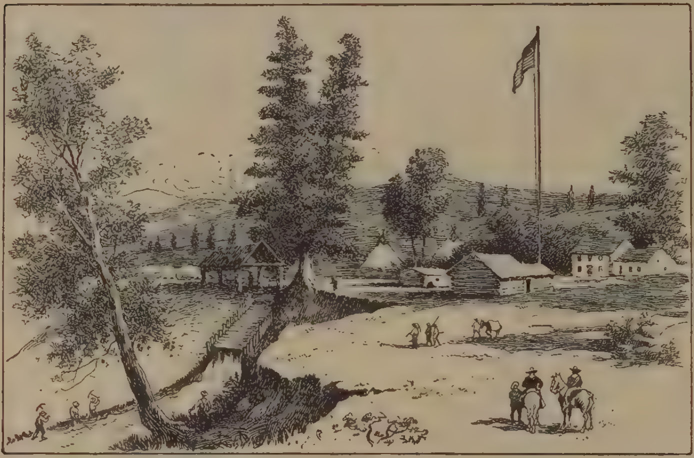


Figure 353. Sutter's sawmill. It was here that James W. Marshall, the carpenter in charge of building the mill, discovered the gold which led in a few months' time to the great gold rush.

Some lucky fellows found fortunes in a few weeks. Others worked for months or years before they were satisfied. Many failed completely. No one will ever know how many people started on this great stampede, for hundreds of them died on the way. However, the census reports show that in 1850 California had 92,600 inhabitants, and that by 1860 it had 380,000.

The settlement of the Far West. It was the gold of California which first attracted large numbers of settlers to the Far West. It was not long, however, before the people of the East realized that there were other resources in the Far West which offered rich opportunities to those who were willing to brave the hardships of the trip across the plains, the mountains, and the deserts. The valley lowlands lying between the Coast Ranges on the west and the Sierra Nevada and Cascade Mountains on the east offered level land and deep, fertile soils for farming, and in Washington, Oregon, and northern California the forests provided abundant fuel and building material.

It was not strange, then, that following the gold rush one group of settlers after another migrated to the Far West, took up farm lands there, and established villages which soon became towns and cities. By 1890 the Far West was well populated, and was connected with the East by five transcontinental railroads.

A study of the trails to the Far West. Use the map on pages 358–359 to study the early trails from the Mississippi River to the Far West.

1. What reason can you give for the fact that St. Louis was the starting point for many of the early pioneers who made their way to the Far West? 2. Trace the Oregon Trail westward from Omaha. 3. What rivers did it follow? 4. Where did it end? 5. Where did travelers going to California leave the Oregon Trail? At what settlement did the California Trail end?

6. Trace the Santa Fe Trail westward from Kansas City. 7. To what settlement in what is now our state of New Mexico did it lead? 8. Trace two trails that led from that settlement to the Far West. 9. What great city of today stands at the end of the old Spanish Trail? 10. From the study of the map, what statements can you make to prove that the early trails to the Far West followed rivers as much as possible?

Old trails and modern highways. Your map studies have shown that the early trails across the Appalachian Mountains to the Mississippi Valley, and from the Mississippi Valley to the Far West, followed rivers wherever possible. One reason, of course, was that in most places the river valleys were the lowest and most nearly level routes. Wherever it was possible for the pioneers to build flatboats or rafts and float downstream on the rivers, they preferred that method of travel, for it was much easier than traveling over the rough trails.

13

Through the western half of our country, where the climate is at places very dry, there was another reason why the trails were determined in large part by the river courses. The travelers knew that they must be near water both for themselves and for their animals. No other hardships are so severe and dangerous as those that come from great thirst. When the mountains were reached, passes were sought to lessen the difficulties of crossing as much as possible. Few of the travelers had accurate maps of the country, and they had to depend on directions from other travelers or from the few settlers they found living in these little-known western regions.

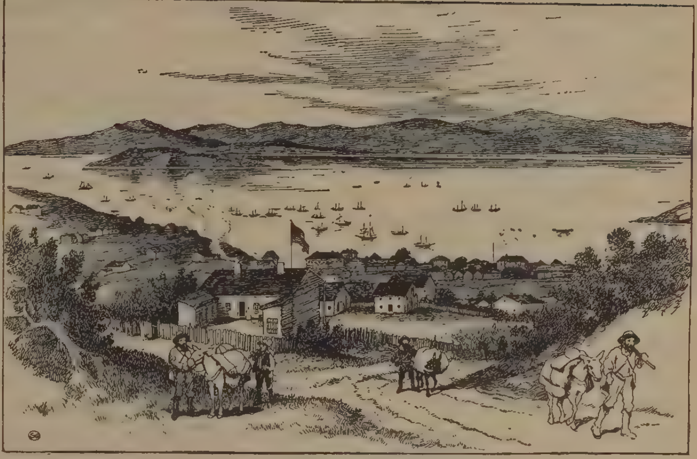


Figure 354. San Francisco, as it looked in 1849. Thousands of fortune hunters, landing from ships at San Francisco, bought mules and mining outfits there, and started off for the gold fields.

We shall find later in our study that many of the trails that were used in the early days became the highways for wagon routes and later for railroads. That, of course, was because the trails which were the easiest for people traveling on foot and on horseback in the early days were the easiest routes over which to build roads and to lay railroad tracks. It was along these trails that many of the earliest settlements were located, and today some of the great transcontinental automobile highways follow closely the early routes of migration.

The increasing number of states. As more and more people settled in the lands of the Mississippi Valley and as increasing numbers moved westward to the Pacific coast, more and more states were formed and admitted to the Union. As early as 1853 the boundaries of our country were established as they stand today, and by the end of the year 1860 there were thirty-three states. By the end of 1890 there were forty-four.

Six important changes. Before the close of the one hundred years which ended in 1890, many changes had taken place in this country. Six of the more important changes are given below:

1. No more good land remained for the government to give away to settlers.
2. Much more food was being produced on the farms than was needed in this country.
3. The use of farm machinery had made it possible to get along with fewer workers on the farms.
4. Mining had developed on a large scale and many men were needed in that work.
5. Manufacturing had increased rapidly and the factories and mills needed workmen.
6. More than 160,000 miles of railroad lines had been built and the railroads needed thousands of men.

In 1890 the people of this country were enjoying many comforts and luxuries unknown to their forefathers of 1790, — machinery to help them in all kinds of work, the telegraph and submarine cable to speed their messages over the land and under the sea, and the railroad and steamship to carry them comfortably from place to place. Our nation had grown up in a period of great achievements in science and invention.

Committee work. The work suggested below may be divided among committees made up of members of the class.

1. Secure a map of the transcontinental automobile highways of the United States. Check the routes of the highways by the map on pages 358–359, and show the rest of the class where the highways of today follow the trails of long ago.
2. Find out where and when the first settlements of white people were made in your state, and how the pioneer settlers lived. Make a report on these subjects to your class. Perhaps you can give the report in the form of a short one-act play.
3. Look up (1) the life and work of Daniel Boone or (2) the story of the Lewis and Clark expedition to the Northwest, and prepare a report to be made to the class. If possible, make a good-sized map to illustrate the report.

Some things to explain. 1. Explain why the European colonists who settled in this country were able to make better use of the natural resources than the Indians had ever done.

2. Explain why the French explorers made their way into the Mississippi Valley much earlier than the settlers from the British colonies did.
3. Explain the reasons which led settlers to migrate across the Appalachian Mountains into the Mississippi Valley, and then across the mountains of the West to the Pacific coast.
4. Explain why so many portions of the early trails followed river valleys.
5. In the days of westward migration the journey across the Appalachians to the Mississippi Valley was very difficult, and the journey from the Mississippi Valley to the Pacific coast even more so. Explain why.

3. Some Changes since 1890

In 1890 about 65 per cent of the population of the United States lived on farms or in villages of less than 2500 people. Since 1890 there has been a steady movement of people from the farms to the cities, until now more than half the people of the country live in towns and cities of more than 2500 inhabitants. From the list of changes that had come about before 1890 (page 355) choose the two which you think may have had the most to do with the drift of population from the country to the towns and cities since that time.

The full number of states completed. You will remember that in 1890 there were forty-four states. Since that time the full number of states has been completed, the last, or forty-eighth, state having been admitted to the Union in 1912. Turn to Table 1 on page 512 and name the four states which brought the full number up to forty-eight. Is your own state one of them? If not, when was your state admitted to the Union?

The increase in immigration. As the demand for laborers in mines, factories, mills, on the railroads, and in all kinds of construction work increased in this country, more people came from Europe. The number of immigrants from northwestern Europe was not enough, and thousands began to come each year from the overcrowded countries of southern Europe and from eastern Europe. The great wave of immigration from southern and eastern Europe to America began during the last quarter of the nineteenth century. By the year 1910 more than a million immigrants were coming to this country nearly every year and one in every seven people in the United States was foreign born. That was too much. We could not easily educate these grown people. Our type of government, in which each citizen takes a part, requires that we must all know how to read and write. We should also know a great many things about our country and about the kind of men who are needed in the public offices.

The restriction of immigration. Many of the laborers who came in this great wave of immigration could not read or write in their own language. Many did not care to learn English or to become American citizens. It was certain that some change must be made, and so in 1917 a law was passed requiring each

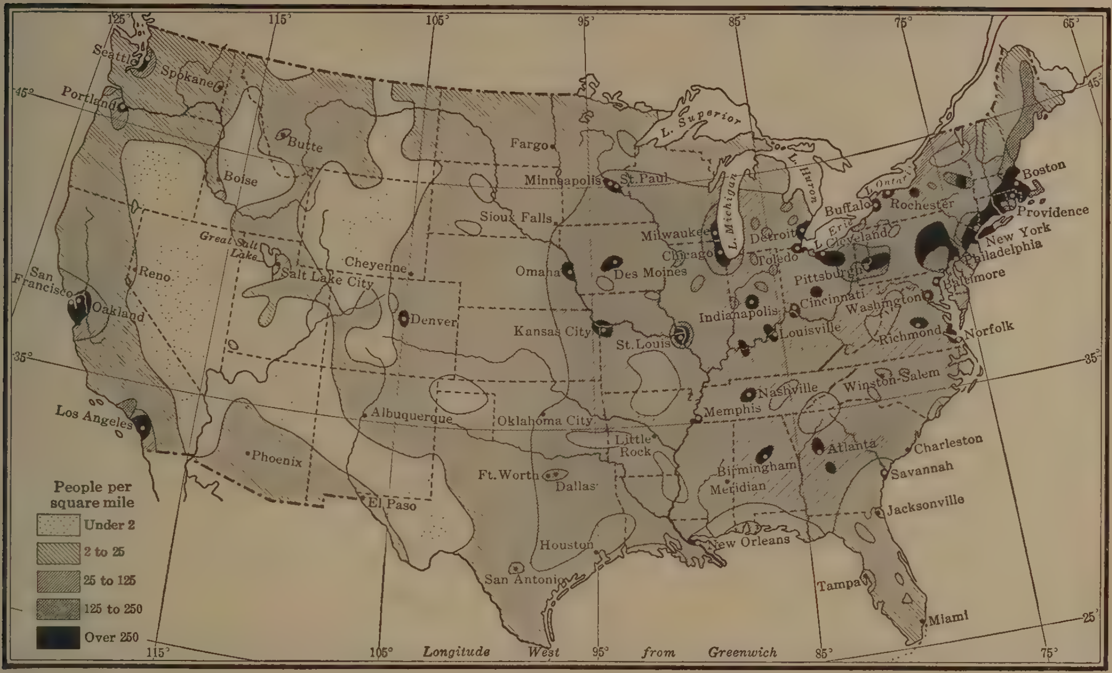

125°
115°
105°
95°
85°
75°
65°
45°
35°
25°
Seattle
Spokane
Portland
Butte
Boise
Great Salt Lake
Salt Lake City
Reno
San Francisco
Oakland
Los Angeles
Phoenix
Cheyenne
Denver
Albuquerque
El Paso
Fargo
Minneapolis
St. Paul
Sioux Falls
Omaha
Des Moines
Kansas City
St. Louis
Oklahoma City
Little Rock
Ft. Worth
Dallas
Houston
San Antonio
L. Superior
L. Michigan
L. Huron
L. Erie
L. Ontario
Milwaukee
Chicago
Detroit
Toledo
Cleveland
Buffalo
Rochester
Boston
Providence
New York
Philadelphia
Baltimore
Washington
Pittsburgh
Cincinnati
Indianapolis
Louisville
Richmond
Norfolk
Winston-Salem
Nashville
Memphis
Atlanta
Birmingham
Meridian
Charleston
Savannah
Jacksonville
New Orleans
Tampa
Miami
People per square mile
Under 2
2 to 25
25 to 125
125 to 250
Over 250
Longitude West from Greenwich

Figure 355. Distribution of people in the United States at the present time.

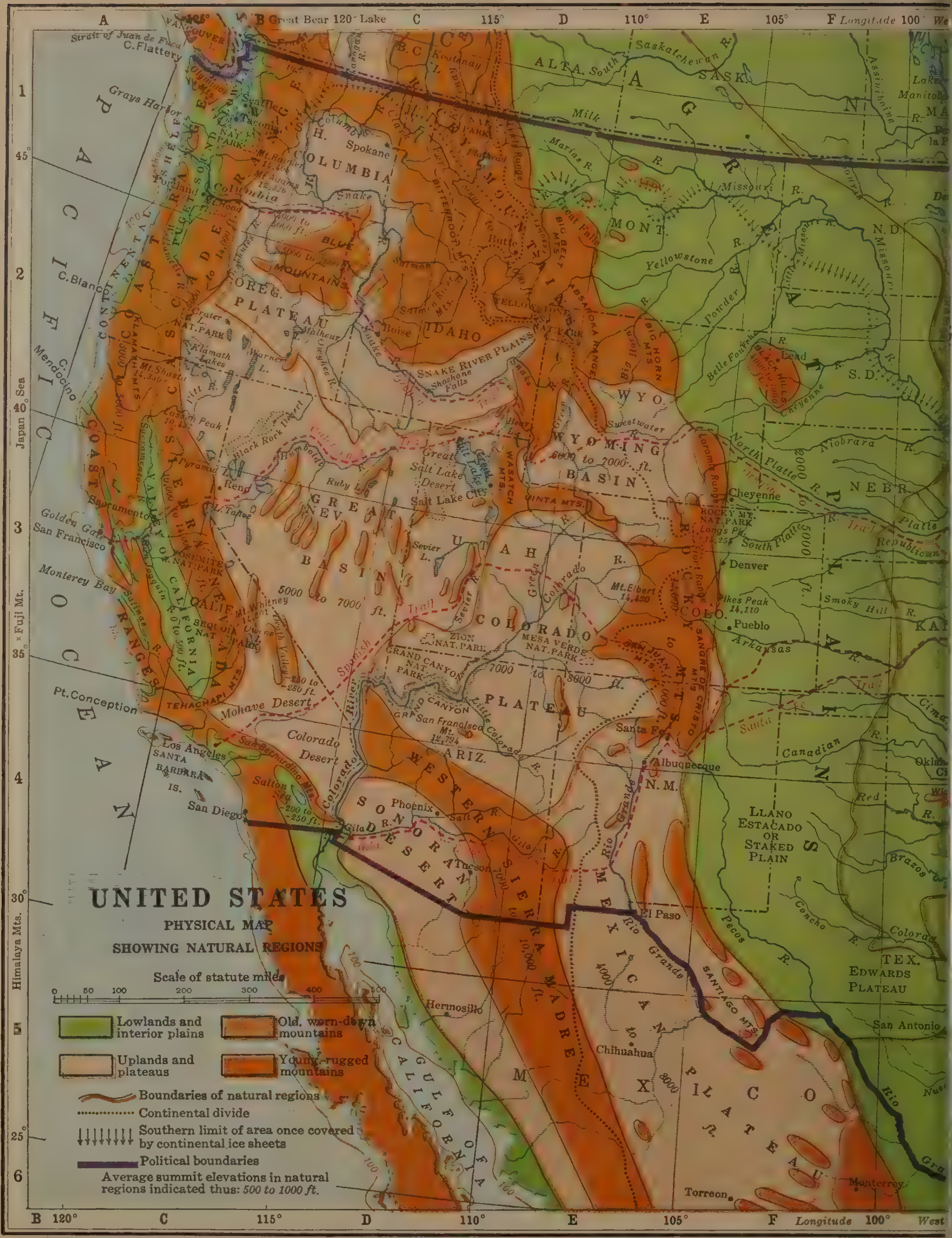
person who wished to enter this country to prove that he could read and write. In 1920, 1924, and 1929 laws were passed limiting the number of immigrants who are allowed to come from each country each year. *See Table 3 on page 512.*

The rapid growth of cities. With the growth of manufacturing industries in our country more and more people have come to live in the cities, and therefore the cities have increased rapidly in population. Thousands of young people born in the country have migrated to the cities, attracted by opportunities for work in mills, factories, workshops, stores, banks, and business offices. One of the principal reasons for this migration has been the invention of labor-saving machines such as gang plows, seeders, mowers, harvesters, and threshers, which have made it possible for the farmers to get along with fewer helpers. The mills and factories also have attracted thousands of the immigrants from Europe, and the great mass of our foreign-born population is now in the cities. We have at least forty large cities in which foreign-born white people make up more than one fourth of the total population. Nearly all these cities are in the great industrial districts of the northeastern quarter of the country.

A study of the present distribution of population in the United States. Answer the following questions by studying Figure 355.

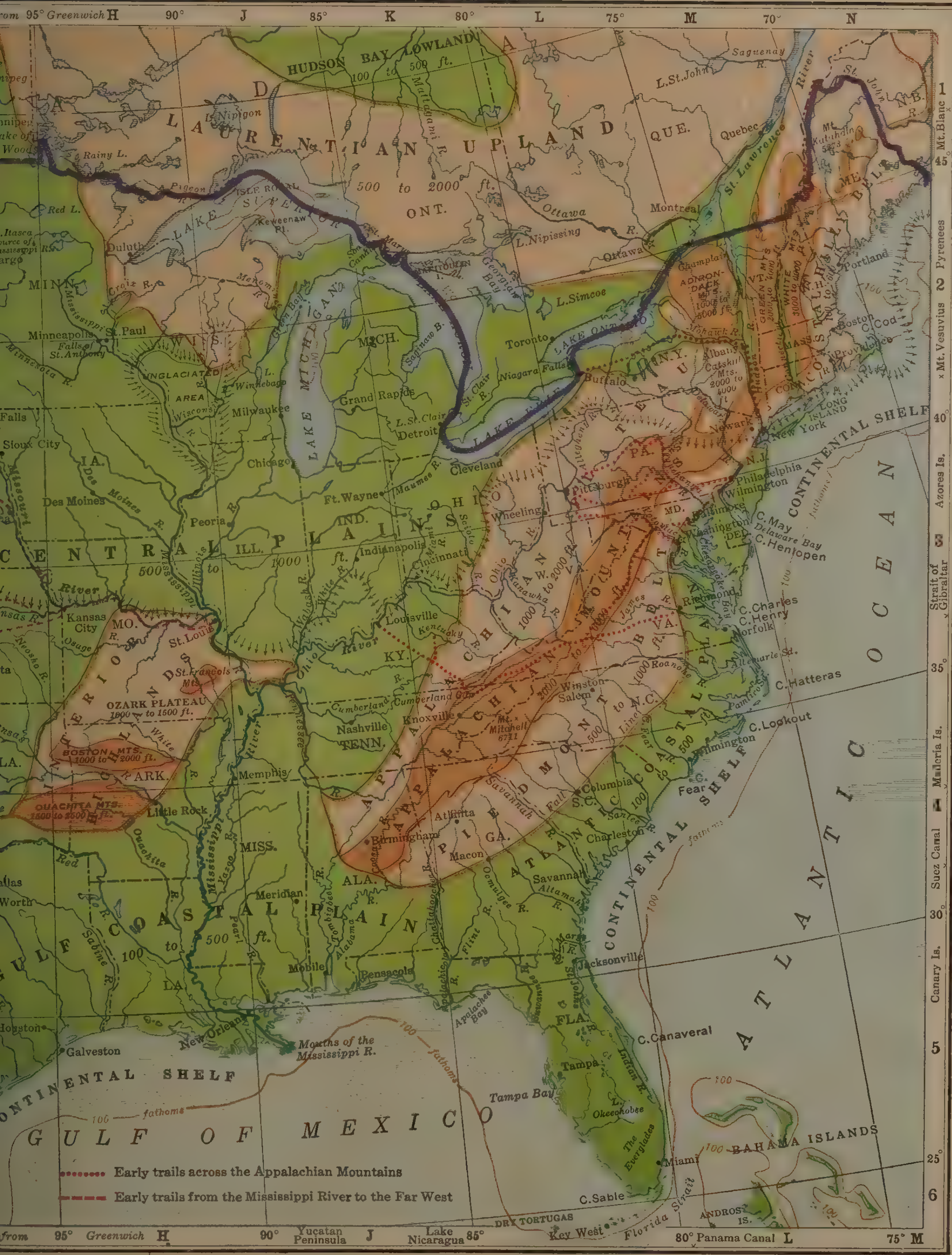
1. What reasons can you give for the fact that certain parts of the United States are crowded with people, while in other parts there is a scarcity of people? 2. Why are the most thinly settled areas in the western half of the country? 3. Why are the largest areas of very dense population in the northeastern part of the country?

4. Why have large cities grown up near the seacoasts? near the Great Lakes? on the banks of large rivers? 5. Make as full a statement as you can about the distribution of population in your own state.



UNITED STATES
PHYSICAL MAP
SHOWING NATURAL REGIONS

Scale of statute miles
0 50 100 200 300 400 500
Lowlands and interior plains
Old, worn-down mountains
Uplands and plateaus
Young, rugged mountains
Boundaries of natural regions
Continental divide
Southern limit of area once covered by continental ice sheets
Political boundaries
Average summit elevations in natural regions indicated thus: 500 to 1000 ft.
PACIFIC OCEAN
COLUMBIA PLATEAU
OREG. PLATEAU
GREAT BASIN
COLORADO PLATEAU
WYOMING BASIN
SNAKE RIVER PLAINS
SONORAN DESERT
MEXICAN PLATEAU
GREAT PLAINS
LLANO ESTACADO OR STAKED PLAIN
EDWARDS PLATEAU
CASCADE MTS.
SIERRA NEVADA
COAST RANGES
VALLEY OF CALIFORNIA
ROCKY MOUNTAINS
BLUE MOUNTAINS
WASATCH MTS.
UINTA MTS.
SIERRA MADRE
GULF OF CALIFORNIA
Seattle
Spokane
Portland
Boise
Salt Lake City
Reno
San Francisco
Los Angeles
San Diego
Phoenix
Tucson
Denver
Pueblo
Cheyenne
Santa Fe
Albuquerque
El Paso
Hermosillo
Chihuahua
Torreon
Monterrey
San Antonio
A B C D E F
1 2 3 4 5 6
120° 115° 110° 105° 100°
45° 40° 35° 30° 25°
Japan Sea
Fuji Mt.
Himalaya Mts.



95° Greenwich H
90°
J
85°
K
80°
L
75°
M
70°
N
HUDSON BAY LOWLAND
100 to 500 ft.
LAURENTIAN UPLAND
500 to 2000 ft.
ONT.
QUE.
L.St.John
Saguenay R.
Quebec
Montreal
St. Lawrence River
Ottawa R.
Ottawa
L.Nipissing
L.Nipigon
Rainy L.
Lake of the Woods
Pigeon R.
ISLE ROYAL
LAKE SUPERIOR
Keweenaw Pt.
Duluth
Red L.
L.Itasca Source of Mississippi R.
MINN.
Minneapolis
St.Paul
Falls of St.Anthony
Minnesota R.
WIS.
UNGLACIATED AREA Wisconsin R.
L. Winnebago
Green Bay
Milwaukee
LAKE MICHIGAN
MICH.
Georgian Bay
Saginaw B.
Grand Rapids
L.St.Clair
Detroit
L.Simcoe
Toronto
LAKE ONTARIO
Niagara Falls
Buffalo
LAKE ERIE
Cleveland
Maumee R.
Ft.Wayne
Chicago
IA.
Des Moines
Des Moines R.
Sioux City
Peoria
ILL.
IND.
Indianapolis
OHIO
Cincinnati
Wheeling
Pittsburgh
CENTRAL PLAINS
500 to 1000 ft.
Illinois R.
Mississippi R.
Missouri R.
River
Kansas City
Kansas R.
Osage R.
Neosho R.
MO.
St.Louis
St.Francois Mts.
OZARK PLATEAU 1000 to 1500 ft.
INTERIOR HIGHLANDS
BOSTON MTS. 1000 to 2000 ft.
OUACHITA MTS. 1500 to 2500 ft.
ARK.
Little Rock
Ouachita R.
White R.
Red R.
Memphis
Louisville
Kentucky R.
KY.
Ohio River
Cumberland R.
Cumberland Gap
Nashville
TENN.
Knoxville
Tennessee R.
Mt. Mitchell 6711
APPALACHIAN PLATEAU
APPALACHIAN MOUNTAINS
1000 to 2000 ft.
W.VA.
Kanawha R.
Allegheny R.
PA.
Susquehanna R.
MD.
Baltimore
Washington
DEL.
Philadelphia
Wilmington
N.J.
Newark
New York
LONG ISLAND
N.Y.
Albany
Catskill Mts. 2000 to 4000 ft.
Mohawk R.
Hudson R.
Delaware R.
ADIRONDACK MTS. 1000 to 5000 ft.
Champlain
VT.
GREEN MTS. 2000 to 4000 ft.
WHITE MTS. 3000 to 6000 ft.
N.H.
ME.
Mt. Katahdin 5273
MASS.
CONN.
Boston
Providence
C.Cod
Portland
N.B.
St. John R.
NEW ENGLAND
COASTAL PLAIN
VA.
Richmond
James R.
Norfolk
C.Charles
C.Henry
Chesapeake Bay
Delaware Bay
C.May
C.Henlopen
Albemarle Sd.
Pamlico Sd.
C.Hatteras
C.Lookout
Roanoke R.
N.C.
Winston-Salem
PIEDMONT 500 to 1000 ft.
Fall Line
Wilmington
C.Fear
Cape Fear R.
S.C.
Columbia
Santee R.
Charleston
Savannah R.
GA.
Atlanta
Macon
Savannah
Altamaha R.
Ocmulgee R.
Flint R.
Chattahoochee R.
Birmingham
Coosa R.
ALA.
Alabama R.
Tombigbee R.
Mobile
Pensacola
Meridian
MISS.
Yazoo R.
Pearl R.
LA.
New Orleans
Mouths of the Mississippi R.
Sabine R.
Houston
Galveston
Dallas
Ft. Worth
GULF COASTAL PLAIN
100 to 500 ft.
ATLANTIC COASTAL PLAIN
ATLANTIC OCEAN
CONTINENTAL SHELF
100 fathoms
Apalachee Bay
Apalachicola R.
Suwannee R.
St. Marys R.
Jacksonville
St. Johns R.
FLA.
C.Canaveral
Indian R.
Tampa
Tampa Bay
L. Okeechobee
The Everglades
Miami
C.Sable
Key West
DRY TORTUGAS
Florida Strait
ANDROS IS.
BAHAMA ISLANDS
GULF OF MEXICO
Mt.Blanc
Pyrenees
Mt. Vesuvius
Azores Is.
Strait of Gibraltar
Madeira Is.
Suez Canal
Canary Is.
45°
40°
35°
30°
25°
1
2
3
4
5
6
Yucatan Peninsula
Lake Nicaragua
80° Panama Canal
75° M
Early trails across the Appalachian Mountains
Early trails from the Mississippi River to the Far West

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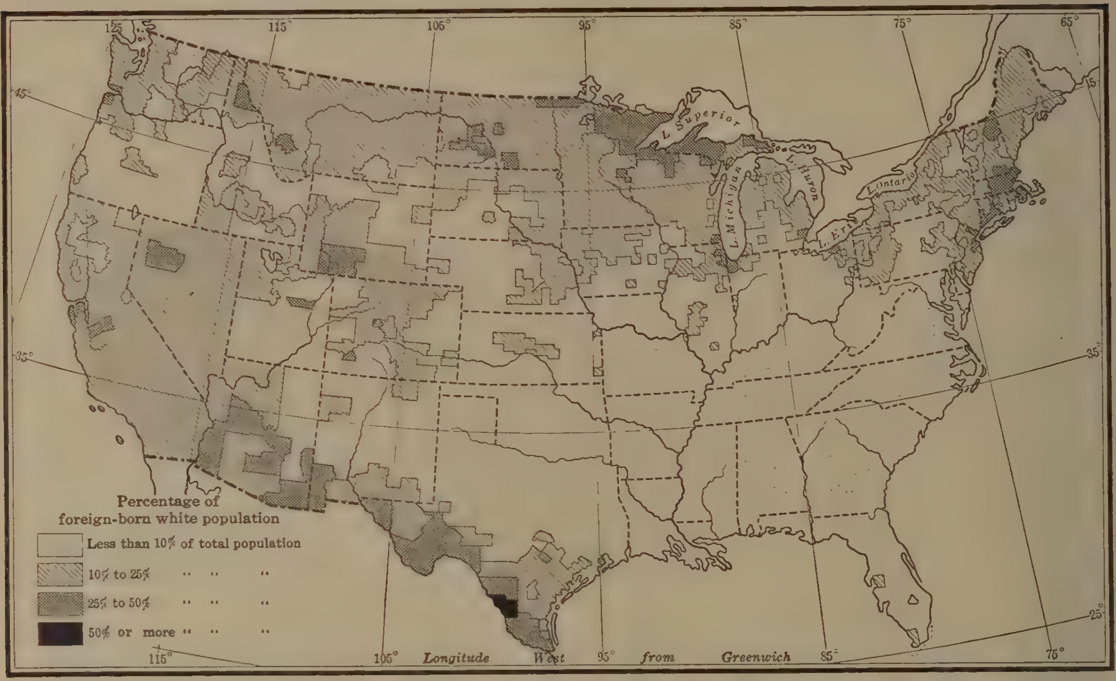

125°
115°
105°
95°
85°
75°
65°
45°
45°
35°
35°
25°
L. Superior
L. Michigan
L. Huron
L. Ontario
L. Erie
Percentage of foreign-born white population
Less than 10% of total population
10% to 25% " " "
25% to 50% " " "
50% or more " " "
115°
105°
Longitude West
95°
from
Greenwich
85°
75°

Figure 356. A map showing the distribution of foreign-born white population in the United States.

A study of the distribution of foreign-born white population. In answering the following questions use Figure 356.

1. How many states are there where foreign-born white people make up less than 10 per cent of the total population? 2. Can you suggest reasons why so many of the Southern States are in this group? 3. How do you account for the fact that New England, New York, New Jersey, and Pennsylvania have so many foreign-born people?

4. In what part of the country do you find an area where more than half the population is made up of foreign-born white people? 5. From what country do you think most of the foreign-born people in that area have come? Give a reason for your answer.

6. Study the distribution of the areas where foreign-born white people make up from 25 per cent to 50 per cent of the population. 7. What areas in that group are important manufacturing districts? 8. What areas in that group are important mining districts? 9. What kinds of work, then, seem to attract large numbers of immigrants?

10. Make as full a statement as you can about the percentage of foreign-born white people in different parts of your own state.

11. At present we have in the United States more than a million people from each of the countries listed in the first two columns below, and more than half a million from each of the countries listed in the third column. Altogether, these people make up nearly three fourths of our foreign-born white population. Locate on the map on pages 330–331 the countries where they were born.

Germany
Italy
Russia
Poland
Canada
Ireland
England
Sweden
Austria

Special credit work. If your own state is among those in which there are areas where 10 per cent or more of the population is made up of foreign-born white people, find out all you can about their nationalities and the kinds of work which have attracted them to your state. Make a report on this subject to your class.

A schoolroom census. You will find it interesting to take a census of your schoolroom. When it is completed, it should give the answers to all the questions below:

1. What is the total number of pupils?
2. How many boys are there?
3. How many girls are there?
4. What is the average age of the boys?
5. What is the average age of the girls?
6. In what countries were the members of the class born?
7. In what countries were their fathers born?
8. In what countries were their mothers born?
9. In what occupations are the fathers?
10. What languages can the members of the class speak?
11. What parts of the United States have the members of the class visited?
12. What foreign countries have they visited?
13. What kinds of work have they learned to do?

Sentences to complete. Complete each sentence below correctly.

1. The first flag of our country had __ stripes and __ stars because ______________________.
2. Today our flag has __ stripes and __ stars because ______________________________.
3. English became the official language of our country because ________________________.
4. Ever since the founding of our nation our country has attracted large numbers of people from Europe because ____________________.
5. In recent years immigration into the United States has been restricted because ___________.
6. Large numbers of foreign-born people live in our large cities because _________________.

Something to do. Turn to page 337 and count the number of cities in the United States which have 100,000 people or more. Compare that number with the number of cities in other countries of the Americas with 100,000 or more people. Give as many reasons as you can for the fact that the United States has many more large cities than any other country in the Americas.

Special credit work. Find out all you can about the reasons for the growth of the largest city in your state, and explain the reasons to your class.

4. OUR POSSESSIONS AND HOW WE OBTAINED THEM

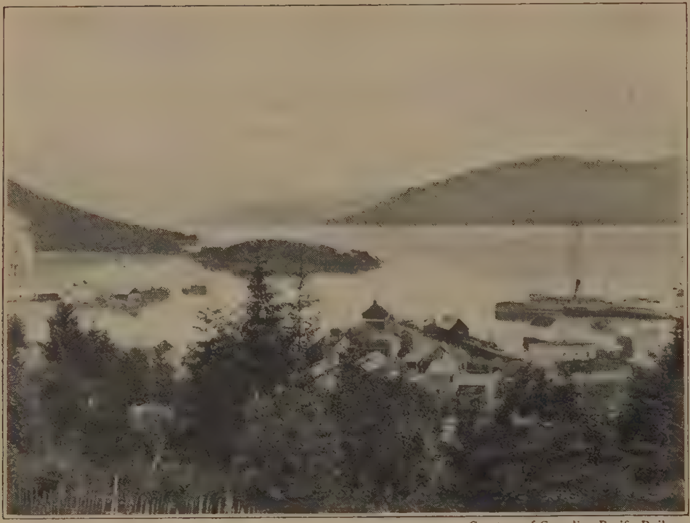
Beginning with the purchase of Alaska from Russia in 1867, the United States has come to have a number of outlying possessions. The map on page 364 shows what they are and where they are located.

The possession of lands far distant from our home country has helped to broaden our interests in the outside world, and it has led some people to leave the United States and take up business or professional work in the outlying territories. In each of our possessions we have introduced modern methods of business and education, and have so improved the general living conditions that the health of the native peoples has been benefited. As you read this section, try to discover why our possessions are of value to us.

Alaska. The territory of Alaska is a frontier land located so far north that when we purchased it for $7,200,000 many people thought the money was wasted. They called it our "Arctic ice box," and refused to believe that a land so far north could have any real value.

Alaska, however, is not an "ice box," and it has many valuable resources. The main peninsula is cold in the winter, but the interior plateau is warm enough for the growth of grain and vegetables during the summer. The winter cold in the southeastern part of the territory is lessened by the westerly winds which reach it after blowing over the warm waters of the Japan Current, and the harbors along the southeastern coast are open the year round. This mountainous coast is so beautiful that large numbers of tourists visit it each year.

The chief wealth of Alaska is in its fisheries, and the annual catch of salmon is worth $40,000,000 or more. Most of the catch is canned and shipped to the United States. Other valuable resources are the forests, the coal and metal ores, and the wild animals which provide considerable quantities of furs.



Courtesy of Canadian Pacific Railway

Figure 357. A tourist steamer at Wrangell on the southeastern coast of Alaska. This mountainous coast, with its many islands and its deep, narrow inlets, is much like the coast of Norway.

Because our country is not as yet overcrowded, few people have been tempted to leave home and settle in Alaska, and at present the territory is thinly populated. Some years ago our government built a railroad from the coast into the interior of the peninsula, and now the territory is fast being covered with a network of airplane lines for passengers and mail. As population increases in the United States and the country becomes more and more crowded, it is almost certain that more people will move to Alaska and that the resources of this valuable territory will be much more fully used than they are today. *See Figure 357.*

The Hawaiian Islands. The Hawaiian Islands, in the midst of the Pacific Ocean, were annexed to the United States in 1898, through an agreement between the people of our country and the people of the islands themselves, and in 1900 they were made a territory of the United States.

These islands are the tops of volcanic peaks which have been built up from the bottom of the Pacific Ocean. The highest of the peaks rise nearly 14,000 feet above the level of the sea; and if the sea waters should disappear, they would tower to elevations of about 27,000 feet above the old bed of the ocean.

The work of mountain building is not yet completed, for on Hawaii, the largest island, the volcanoes are still active. Occasionally they pour forth great quantities of red-hot molten rock, or lava. In the crater of Kilauea, which is one of the most famous volcanoes on the earth, there is a deep pit where the boiling lava may be seen before each great eruption.

Figure 360 shows that the Hawaiian Islands are close to the tropic of Cancer. Because of their location they have a warm climate which makes it possible for the people to raise crops such as sugar cane, rice, pineapples, and bananas. Sugar cane and pineapples are by far the most important crops, and large quantities of raw sugar and canned pineapples are shipped to the United States every year. *See Figure 358.*

The Philippine Islands. These islands are farther away from the United States than any of our other outlying possessions. They belonged to Spain from the year 1542 until 1898, when, at the end of the Spanish-American War, they were ceded to the United States. Most of the people are native Filipinos, but there are also some forty thousand Chinese living in the islands, several thousand Japanese, and somewhat smaller numbers of Americans and people of Spanish descent.

The Philippine Islands are mountainous, and, as Figure 360 shows, they are located in the tropics. Along the coasts and in the river valleys there are lowlands where the people raise large quantities of rice, corn, coconuts, sugar cane, and other crops which grow well in the warm climate. To the United States the

Filipinos send each year large quantities of sugar, coconut oil, copra, and abaca. As you may remember, copra is the dried "meat" of the coconut, and abaca is manila hemp, a fiber used in making rope and twine. *See Figure 359.*

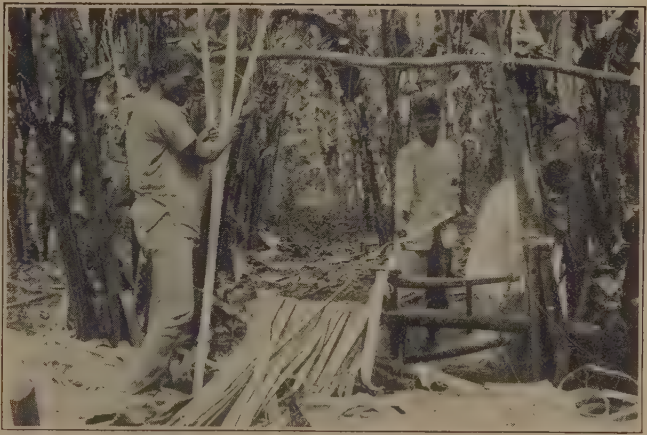


Figure 359. Stripping abaca in the Philippine Islands. The abaca plants look like banana plants, and the fiber is obtained from the sheathlike layers of the stalks.

The Philippines, and also the Hawaiian Islands, provide excellent markets for cotton goods and other manufactures from the United States, for both groups of islands are densely populated.

Porto Rico and the Virgin Islands. These islands are our only possessions in the West Indies. Porto Rico, which had formerly been a Spanish possession, was ceded to the United States at the end of the Spanish-American War in 1898. The Virgin Islands we bought from Denmark in 1917.

These possessions in the West Indies are mountainous islands with a warm climate, and they help to supply us with sugar, tobacco, grapefruit, and fresh pineapples. Porto Rico, which is a densely populated island, looks to the United States for most of its supplies of foodstuffs such as rice and wheat flour, and for its cotton goods, iron and steel goods, and most of its other manufactured goods.

The Panama Canal Zone. This strip of land, you will remember, borders the Panama Canal which the United States built across the Isthmus of Panama to connect the Atlantic and Pacific oceans. It was purchased from the Republic of Panama before the United States undertook to build the canal, and it is valuable chiefly as a means of protecting this important waterway. On the average, seventeen ships a day pass through the canal, and in the course of each year ships from all the commercial countries of the world make use of it.

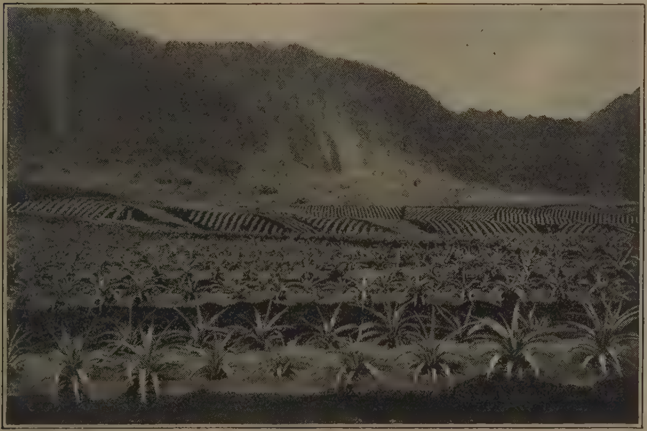


Figure 358. A pineapple plantation in the Hawaiian Islands. Pineapple plantations cover thousands of acres in the fertile lowlands between the mountains of these islands.

Our small island possessions in the Pacific Ocean. Figure 360 shows that in addition to the Hawaiian Islands we control a number of widely scattered islands in the Pacific Ocean. Food-producing plants and trees grow in abundance on these islands, and the native people live an easy, carefree life. The islands serve as stations in the ocean where ships can call for coal or stop for repairs, and where cable and radio stations can be established.

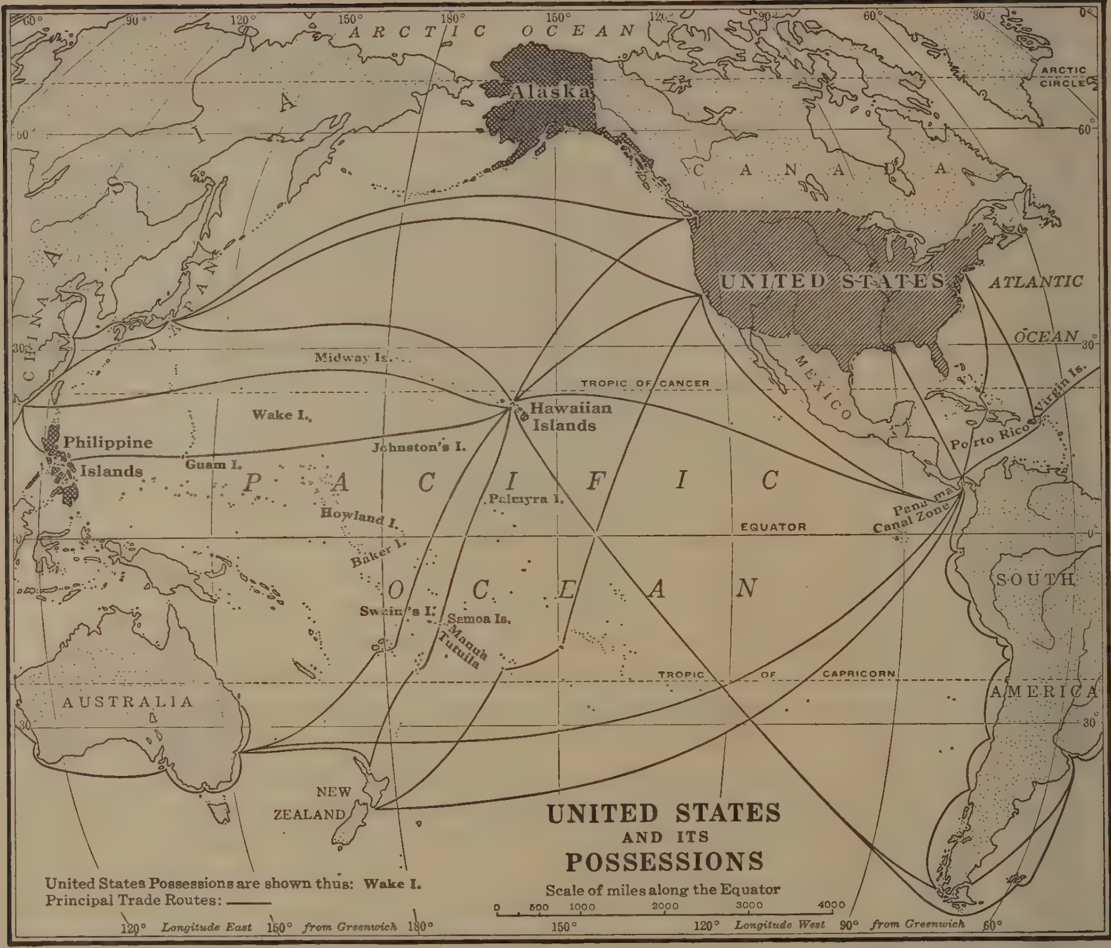

ARCTIC OCEAN
Alaska
ARCTIC CIRCLE
CANADA
ASIA
JAPAN
CHINA
UNITED STATES
ATLANTIC OCEAN
MEXICO
TROPIC OF CANCER
Midway Is.
Wake I.
Hawaiian Islands
Philippine Islands
Guam I.
Johnston's I.
PACIFIC OCEAN
Palmyra I.
Howland I.
Baker I.
Swain's I.
Samoa Is.
Manua
Tutuila
EQUATOR
Panama Canal Zone
Porto Rico
Virgin Is.
SOUTH AMERICA
TROPIC OF CAPRICORN
AUSTRALIA
NEW ZEALAND
UNITED STATES AND ITS POSSESSIONS
Scale of miles along the Equator
0 500 1000 2000 3000 4000
United States Possessions are shown thus: Wake I.
Principal Trade Routes:
120° Longitude East 150° from Greenwich 180° 150° 120° Longitude West 90° from Greenwich 60°

Figure 360. The United States and its possessions.

A possessions test. Use Figure 360 as you answer the following questions:

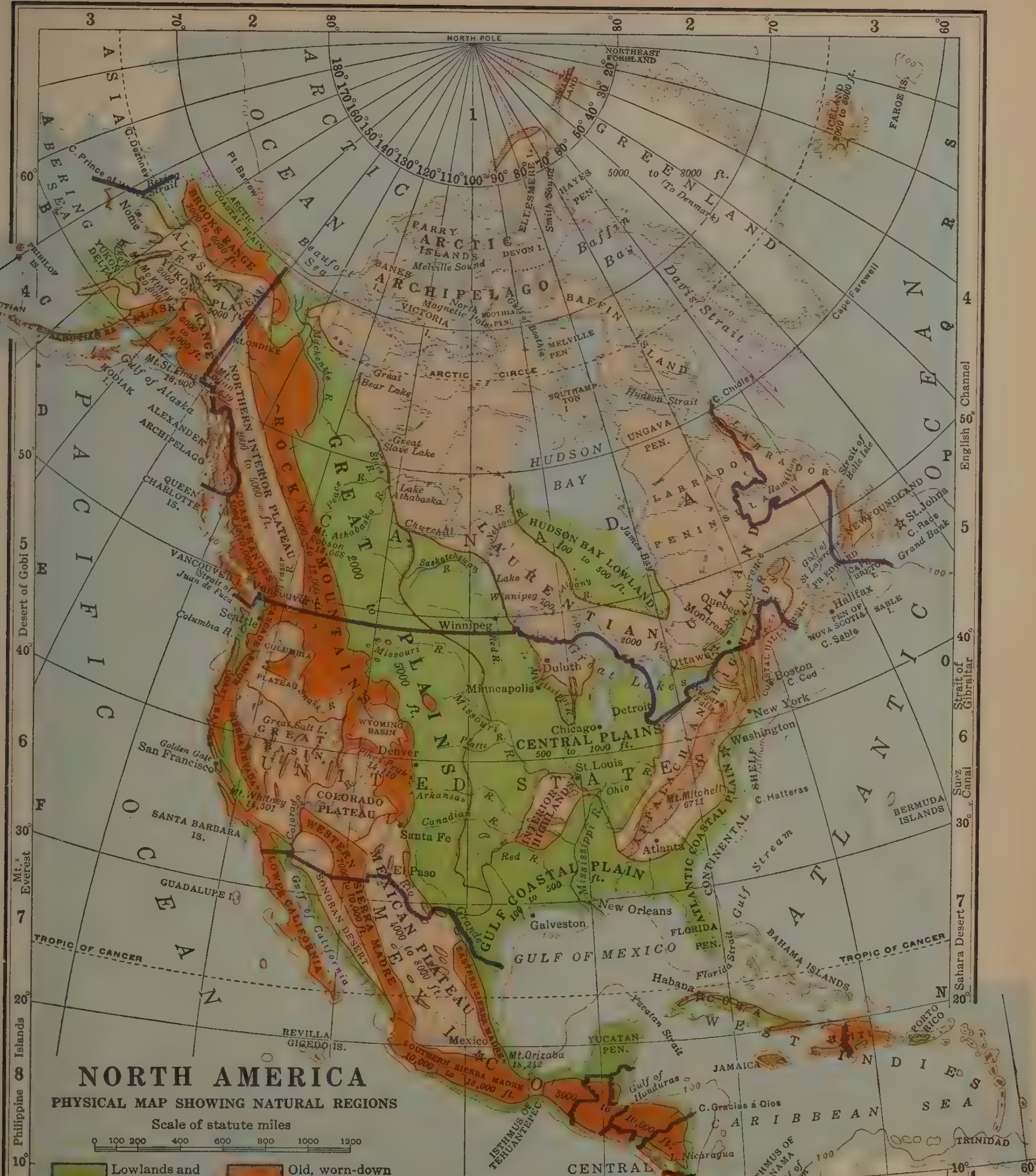
1. What is our largest possession? 2. How did we obtain it? 3. How and why is its climate different from the climate of our other possessions? 4. Why is it thinly populated? 5. What facts can you give to prove that its purchase was worth while?

6. Which one of our possessions is off the southeastern coast of Asia? 7. Turn to the map on pages 334–335 and tell what European explorers first visited those islands. 8. How and when did our country obtain the islands from the former owners?

9. One of our groups of island possessions is said to be "at the crossroads of the Pacific." Which group is it, and why is it spoken of in that way? 10. How did this group of islands come into our possession?

11. What islands do we own in the West Indies? 12. How did they come into our possession? 13. What reason did we have for buying a strip of land across the Isthmus of Panama? 14. What is that strip of land called, and why?

15. What facts can you give to prove that our possessions in the tropics are of value to us? 16. What have we done to help the people of those possessions?


NORTH AMERICA
PHYSICAL MAP SHOWING NATURAL REGIONS
Scale of statute miles
0 100 200 400 600 800 1000 1200
🟩 Lowlands and interior plains
▨ Uplands and plateaus
☐ Glacial ice
🟥 Old, worn-down mountains
🟥 Young, rugged mountains
Boundaries of natural regions
Average summit elevations in natural regions indicated thus: 500 to 1000 ft.
NORTH POLE
ARCTIC OCEAN
ASIA
BERING SEA
Bering Strait
C. Prince of Wales
C. Dezhnev
Nome
Pt. Barrow
BROOKS RANGE
ARCTIC COASTAL PLAIN
YUKON DELTA
YUKON PLATEAU
ALASKA RANGE
Mt. McKinley
PRIBILOF IS.
ALEUTIAN IS.
KODIAK I.
Gulf of Alaska
Mt. St. Elias 18,000
KLONDIKE
ALEXANDER ARCHIPELAGO
QUEEN CHARLOTTE IS.
NORTHERN INTERIOR PLATEAU
ROCKY MOUNTAINS
COAST RANGES
Mt. Robson 13,068
Mt. Athabaska
VANCOUVER I.
Strait of Juan de Fuca
Vancouver
Seattle
Columbia R.
COLUMBIA PLATEAU
Snake R.
CASCADE RANGE
SIERRA NEVADA
Mt. Whitney 14,501
Great Salt L.
GREAT BASIN
WYOMING BASIN
Denver
Pikes Peak 14,110
COLORADO PLATEAU
Golden Gate
San Francisco
SANTA BARBARA IS.
GUADALUPE I.
Santa Fe
El Paso
WESTERN SIERRA MADRE
MEXICAN PLATEAU
EASTERN SIERRA MADRE
SOUTHERN SIERRA MADRE
SONORAN DESERT
LOWER CALIFORNIA
Gulf of California
REVILLA GIGEDO IS.
Mexico
Mt. Orizaba 18,242
ISTHMUS OF TEHUANTEPEC
MEXICO
TROPIC OF CANCER
PACIFIC OCEAN
Beaufort Sea
Mackenzie R.
Great Bear Lake
Great Slave Lake
Lake Athabaska
Peace R.
Slave R.
GREAT PLAINS
Saskatchewan R.
Churchill R.
Lake Winnipeg
Winnipeg
Missouri R.
Platte R.
Arkansas R.
Canadian R.
Red R.
Minneapolis
Duluth
Great Lakes
Chicago
Detroit
CENTRAL PLAINS 500 to 1000 ft.
St. Louis
Ohio R.
Mississippi R.
INTERIOR HIGHLANDS
APPALACHIAN
Mt. Mitchell 6711
Atlanta
GULF COASTAL PLAIN
ATLANTIC COASTAL PLAIN
CONTINENTAL SHELF
New Orleans
Galveston
Rio Grande
GULF OF MEXICO
FLORIDA PEN.
Florida Strait
Habana
CUBA
Yucatan Strait
YUCATAN PEN.
Gulf of Honduras
C. Gracias á Dios
CENTRAL AMERICA
L. Nicaragua
ISTHMUS OF PANAMA
Gulf of Darien
Gulf of Panama
COCOS I.
MALPELO I.
SOUTH AMERICA
CARIBBEAN SEA
JAMAICA
HAITI
PORTO RICO
WEST INDIES
TRINIDAD
BAHAMA ISLANDS
BERMUDA ISLANDS
C. Hatteras
Gulf Stream
Washington
New York
Boston
C. Cod
Ottawa
Montreal
Quebec
St. Lawrence R.
Gulf of St. Lawrence
PR. EDWARD I.
CAPE BRETON I.
Halifax
NOVA SCOTIA
C. Sable
SABLE I.
NEWFOUNDLAND
St. Johns
C. Race
Grand Bank
Strait of Belle Isle
LABRADOR PENINSULA
LAURENTIAN
HUDSON BAY
HUDSON BAY LOWLAND
James Bay
Albany R.
Nelson R.
UNGAVA PEN.
Hudson Strait
C. Chidley
SOUTHAMPTON I.
MELVILLE PEN.
ARCTIC CIRCLE
BAFFIN ISLAND
BOOTHIA PEN.
Gulf of Boothia
North Magnetic Pole
VICTORIA I.
BANKS I.
PARRY ARCTIC ISLANDS
ARCTIC ARCHIPELAGO
Melville Sound
DEVON I.
ELLESMERE I.
Smith Sound
HAYES PEN.
Baffin Bay
Davis Strait
GREENLAND 5000 to 8000 ft. (To Denmark)
NORTHEAST FORELAND
Cape Farewell
ICELAND
FAROE IS.
ATLANTIC OCEAN
English Channel
Strait of Gibraltar
Sahara Desert
Suez Canal
Desert of Gobi
Mt. Everest
Philippine Islands
130° 120° 110° Longitude West 100° from Greenwich 90° 80° 70° C. Horn

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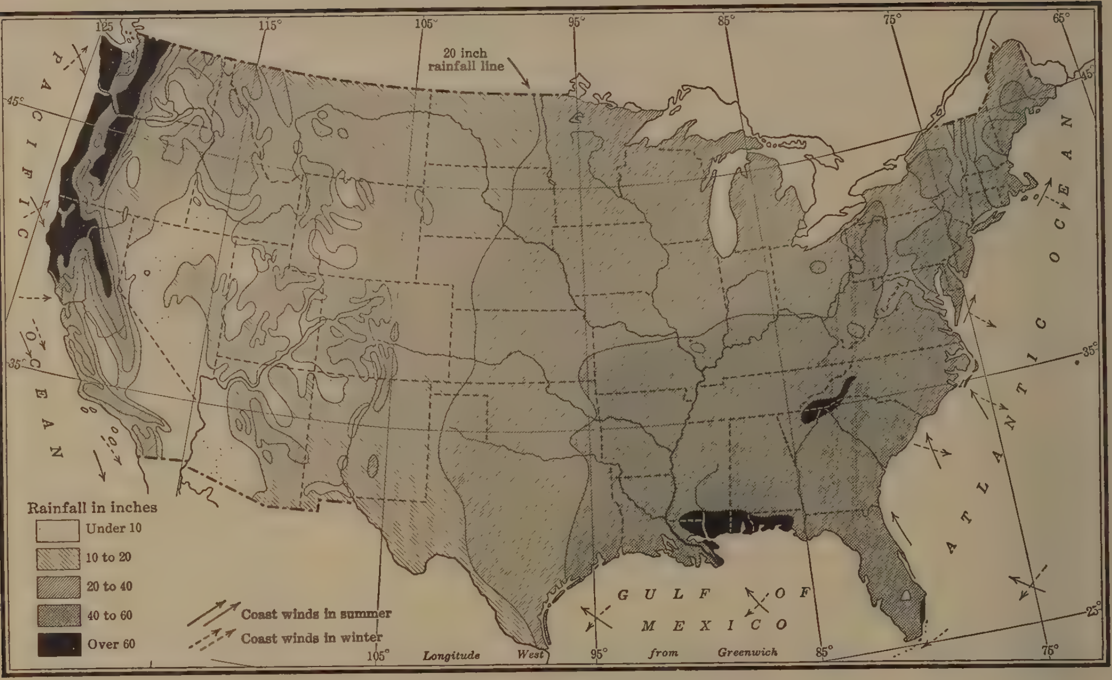

125°
115°
105°
95°
85°
75°
65°
45°
35°
25°
20 inch rainfall line
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
Longitude West from Greenwich
Rainfall in inches
Under 10
10 to 20
20 to 40
40 to 60
Over 60
Coast winds in summer
Coast winds in winter

Figure 361. Distribution of rainfall in the United States.

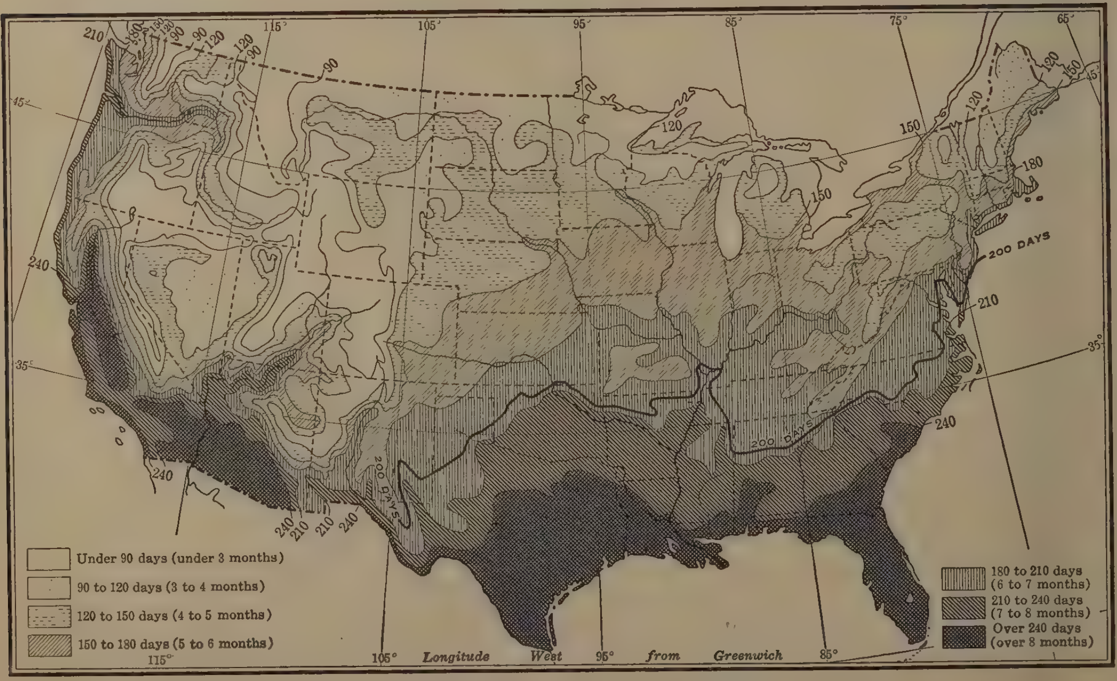
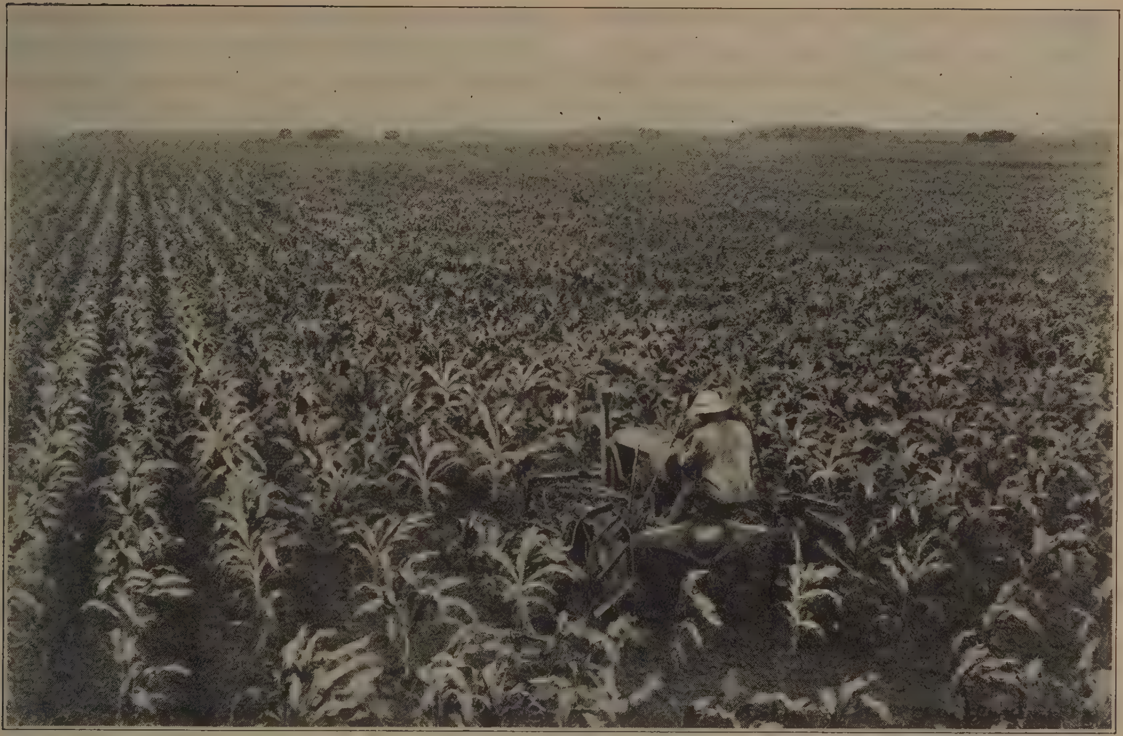

115°
105°
95°
85°
75°
65°
45°
35°
210
150
130
90
120
240
200 DAYS
180
Longitude West from Greenwich
Under 90 days (under 3 months)
90 to 120 days (3 to 4 months)
120 to 150 days (4 to 5 months)
150 to 180 days (5 to 6 months)
180 to 210 days (6 to 7 months)
210 to 240 days (7 to 8 months)
Over 240 days (over 8 months)

Figure 362. Length of growing season in the United States.



Courtesy of International Harvester Company of America, Inc.

Figure 363. A field of corn in the Central Plains. In this region of our country the surface of the land, the abundance of rainfall, and the fertility of the soils combine to provide remarkably favorable conditions for farming. Find the Central Plains on the map (pp. 358–359) and name the states that share them.

III. THE USE OF THE FARM LANDS

Foreword. The prosperity of the United States is due chiefly to the favorable conditions for farming. Few other nations produce so much food per person, and this accounts in part for the general high standard of living in this country. If it were necessary, we could get along without importing any food from foreign countries.

The only articles of food that we now receive in large quantities from other lands are coffee, sugar, vegetable oils, fruit, cocoa, and tea. We could produce much more sugar, vegetable oils, and fruit if that were necessary, and we could even produce tea. But since the great sugar-and-fruit-growing regions of the West Indies and Central America are so near, and since tea and vegetable oils can be produced so much more cheaply in the Orient than in the United States, we have not tried to supply all the sugar, vegetable oils, and fruit that we need, and we produce practically no tea. Of course, many people would dislike having to do without coffee or cocoa, but these are not necessities.

As you read this chapter try to discover

1. Why our farmers can produce large crops of many different kinds.

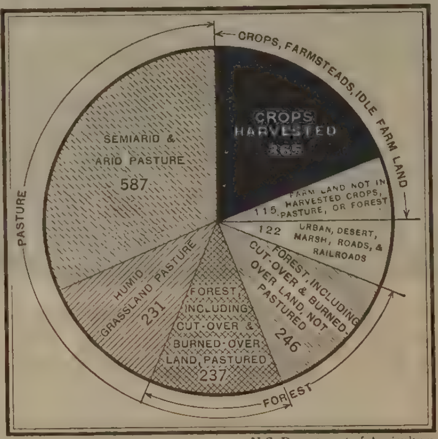
2. What our chief farm products are, where they are grown, and which ones provide a surplus for export.

3. Whether or not we can increase our production of crops.

1. Favorable Conditions for Farming

Make a list of all the conditions which you believe have helped to make the United States one of the greatest farming countries of the world. Keep your list and check it as you study this section.

Large areas of level, well-watered land. We are exceedingly fortunate in having much land that is level or nearly level. Seven eighths of the land in the United States is not too rough for producing crops. The percentage of land which can actually be used for crops is less than that, however, for certain parts of the country which are level enough for farming have too little rain. Figure 361 shows that the dry areas are in the West, and that in much more than half of the country the annual rainfall is over 20 inches. Twenty inches or more are sufficient for general farming. Furthermore, in some of the drier sections water is available from neighboring mountains, and so considerable areas can be irrigated.



U.S. Department of Agriculture

Figure 364. A diagram showing the use of the land in the United States. The figures indicate millions of acres. The total land area is 1903 million acres, of which 365 million acres, or nearly one fifth, produce crops.

Long growing seasons. With the exception of Alaska the United States lies south of latitude 50°, and practically all of it has a growing season long enough for crops of some kind to mature. As you probably remember, the growing season is the length of time from the last killing frost of spring to the first killing frost of autumn.

Figure 362 shows that the growing season in most of the country is over ninety days in length, and that much of the country has from one hundred and twenty to two hundred and forty days for a growing season. The southern fringe of the country is in the subtropical zone with practically all frost-free days. Our farmers can therefore produce a great variety of crops ranging from sugar cane along the Gulf coast to wheat and hay on the Canadian border.

In the great farming sections of the central and southeastern portions of the country the rainfall is greater in the summer, during the growing season, than in the winter. Can you explain why that is a favorable condition for farming?

A variety of rich soils. Our country is also fortunate in having a large variety of fertile soils. Many of the farming areas have such rich soils that they need little or no fertilizer; others must have phosphates, nitrates, or potash added to them. It is important to keep in mind that in the central part of the country, where the growing season and the rainfall are favorable for farming over large areas, so also are the soils and the gently rolling surface of much of the land. *See Figure 363.*

Irrigated farming and dry farming. In the western half of the country there are many rich gardenlike areas where excellent crops are produced by means of irrigation. Most of these areas are cultivated intensively and yield large crops of alfalfa, sugar beets, fruits, and vegetables. In certain parts of our Western States there are farmers who practice dry farming. They keep the upper layer of soil loose so as to delay the evaporation of moisture from the ground, and use other methods to store up moisture in the soil. They raise varieties of wheat and other crops which, because they can stand prolonged periods of drought, are said to be drought resistant.

N.H
Mass
R.I.

Our large area of land under cultivation. Because the United States is so large and because so much of it has favorable conditions for farming, it has more land under cultivation than any other one country in the world. We have 3.5 acres of cultivated land for each person in the country, while most European countries have from 1 to 1.5 acres of cultivated land per person. In the British Isles the land yielding crops amounts to less than one third of an acre for each person. The only countries where more acres per person are cultivated than in the United States are the sparsely settled countries such as Argentina and Canada. *See Figure 364.*

The table in the next column indicates the percentage of improved farm land in those states of our Union where the amount of such land is over 20 per cent of the total area of the state. In general, we may think of "improved land" as land under cultivation, although it includes in addition to cultivated lands (1) land that could be cultivated but is used for pasture; (2) crop land lying fallow, or unused, for the time being; and (3) land which is used for buildings and barnyards.

The table shows that Iowa leads in percentage of improved land in farms and that nearly all the states in the upper portion of the Mississippi Valley rank high. On the other hand, some of the states in New England and those states that are in mountainous or dry regions of the West are so far down in the list that they do not appear in this table.

Questions for study of the table. 1. In what two states does the improved land in farms make up more than three fourths of the total area of the state? 2. In what seven states does the improved land make up from one half to three fourths of the total area? 3. Turn to the map on pages 358–359 and prove that all but one of the nine states which you have named are partly or wholly in the Central Plains. 4. What reasons can you suggest for this fact? 5. What states listed in the table extend farthest west? 6. Use the map (pp. 358–359) and the table to prove that all the states lying wholly west of the hundredth meridian have less than 20 per cent of improved land in farms. 7. What four of the New England States are missing from the table? What three of the Southern States? 8. What statement can you make about the percentage of improved land in the last seven states which you have named?

Ia.
Ill.

hio
Kans.
Mo.
N.D.
Ky.
Del.

N.D.
S.D.
Nebr

Mont
Wyo
Colo
N.M
Ariz
Utah
Idah
Was
Oreg
Cal
Ne

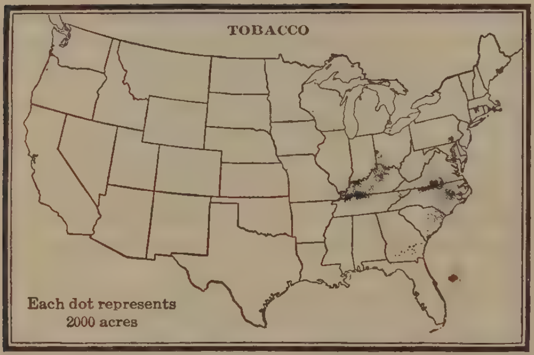
Tex
La
Fl

PERCENTAGE OF IMPROVED LAND IN TOTAL LAND AREA, 1920

STATE	PER CENT	STATE	PER CENT
Iowa	80.4	Oklahoma	40.8
Illinois	76.1	South Dakota	37.0
Indiana	72.3	Virginia	36.7
Ohio	71.1	West Virginia	35.9
Kansas	58.5	Wisconsin	35.2
Missouri	56.5	Michigan	35.1
North Dakota	54.7	Georgia	34.7
Kentucky	54.3	New Jersey	32.3
Delaware	51.9	South Carolina	31.7
Maryland	49.3	Mississippi	31.4
Nebraska	47.0	Alabama	30.1
New York	43.1	Vermont	29.0
Tennessee	41.9	Arkansas	27.5
Minnesota	41.5	North Carolina	26.3
Pennsylvania	41.3	Connecticut	22.7

Other states have less than 20 per cent

A summary of this section. Just by good fortune this country enjoys the advantages that come from a combination of favorable conditions for the production of crops. We have (1) large areas of level or gently rolling lands, (2) abundant rainfall in much of the country, (3) a variety of good soils, (4) growing seasons which make possible the production of a great variety of crops, (5) lands where dry farming can be practiced, and (6) water to irrigate parts of the dry lands. Nothing is more important to the welfare of the people today than the production of food and other farm products, and nothing will ever be more important to the increasing numbers of people who are to live in this country.



U.S. Department of Agriculture

Figure 365. A map showing where tobacco is grown in the United States. Nearly nine tenths of all the land used for tobacco-growing is in six states: Virginia, the Carolinas, Kentucky, Tennessee, and Ohio.

A class project. Prepare a special portfolio of pictures of farm life in the United States. Railroad folders, advertising circulars, and magazines will be of great help to you.

Some questions for class discussion. 1. Texas, our largest state, has more acres of improved land than any other state, yet its *percentage* of improved land is low. What are the reasons for this?

2. Why is the percentage of cultivated land in the Western States so low compared with the percentage in the Central States?

3. Why do the New England States have a small percentage of improved land in farms?

4. Why is there so much more cultivated land per person in the United States than in most of the countries of Europe?

2. Two Important Crops

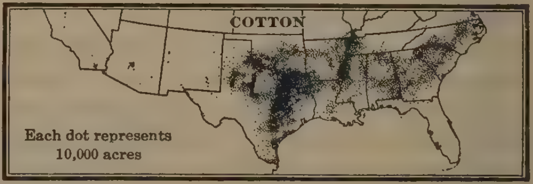
In the early days, when the colonists came from western Europe and settled along the Atlantic seaboard, many of them selected their homes with the intention of clearing and cultivating the lands. They realized that they must produce most if not all of their food and the fibers for their clothing. In those days little thought was given to the production of food for the use of the people in other countries. However, toward the south, two crops were produced that led quickly to an export trade, and they have remained important crops to this day. One was tobacco and the other was cotton.

Tobacco. The early colonists in Virginia were the first to undertake the cultivation of tobacco. They developed the plantation system and raised large crops of tobacco which were sent, for the most part, across the Atlantic Ocean to England to be sold.

Tobacco-farming continued to be important, and as more lands were settled in Virginia and in North and South Carolina tobacco became one of the leading crops. Later, when the interior portion of the country was occupied and the soils of the upper Mississippi Valley cultivated, Kentucky and Tennessee became very important centers in the production of tobacco. Today the leading states in the production of tobacco, arranged in the order of their importance, are North Carolina, Kentucky, Virginia, and Tennessee. *See Figure 365.*

The United States produces more tobacco than any other country in the world. In fact, we produce over twice as much as the next largest producer, which is India. Then comes the Soviet Union and then Brazil, Turkey, and Greece. Turn to Table 10 on page 513 and find out what countries are our best customers for tobacco.

Cotton. As the Southern States were opened up for farming, the plantation system developed there, and cotton became the leading crop. Many hands were needed in cultivating, picking, and preparing the cotton for shipment, and until the time of the Civil War most of the work was done by negro slaves.



U.S. Department of Agriculture

Figure 366. A map showing where cotton is grown in the United States. The areas where cotton gives the largest yields per acre are for the most part those where the soils are richest or those where the farmers use the largest quantities of fertilizers.

As the cotton belt expanded westward, it came in time to be the greatest cotton-producing region of the world. It produces today more than half the world's supply of cotton.

Among the crops produced in the United States cotton ranks second in value; corn is the only farm crop which outranks it. Of all the crops which we raise for export, however, cotton ranks first. *See Figures 366 and 367.*

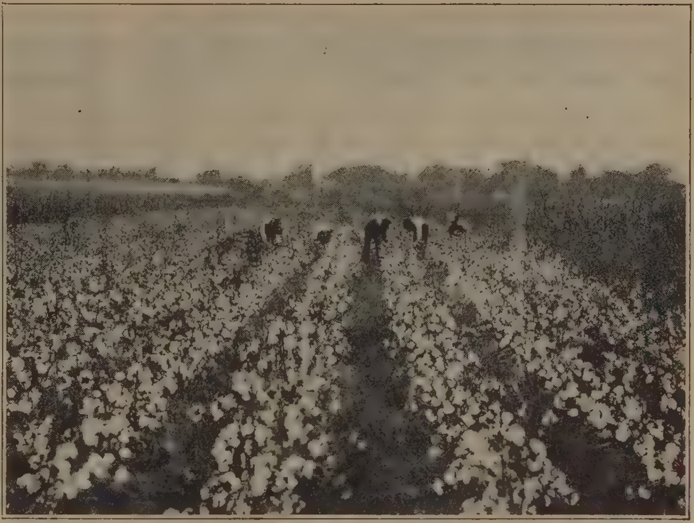


Figure 367. Picking cotton in Mississippi. The cotton is picked from the bolls by hand; and since all the bolls do not open at the same time, each cotton field requires several pickings.

Where cotton can be "king." Turn to the map on page 376 and study the limits, or boundaries, of the cotton belt. They are determined by climatic conditions. Cotton is grown as far north as there are at least two hundred days in the growing season. Very little is grown farther north because it cannot be depended on to ripen in profitable quantities unless it has at least two hundred days that are free from frost. The belt extends westward to the region where the rainfall is less than 20 inches a year, or less than 15 inches in the growing season. If a farmer tries to raise cotton with much less than 20 inches of rainfall a year, he must usually irrigate the land.

The cotton belt does not extend southward through Florida; it does not reach the Atlantic Ocean; and except in southern Texas it does not extend to the Gulf of Mexico. That is partly because the autumn rainfall is too heavy in those coastal regions. When rain comes in abundance during the ripening and picking season of the cotton, it spoils the fiber in the cotton bolls. Furthermore, the boll weevil, a small beetle that injures the cotton, seems to thrive best in wet, warm regions, and therefore is more injurious to the cotton in the extreme south than it is farther north and west.

If we sum up the conditions which make it possible for cotton to be the "king" crop in this belt, we find them to be (1) a long growing season with high summer temperatures; (2) rainfall that varies from 20 to 55 inches throughout most of the belt; (3) an abundance of sunshine; (4) soils that are naturally rich, or sandy soils which can be enriched easily with fertilizers; and (5) excellent means of transportation.

The enemy to the "king." The boll weevil is proving to be a very difficult enemy for the cotton-farmers to fight. This tiny beetle bores its way into the cotton buds, or "squares," and into the young bolls, and injures the growth of the cotton. The beetles came into Texas from Mexico in 1892, and have spread northward and eastward from there as far as cotton is grown. Today they are most abundant along the coast of the Gulf of Mexico. One of the reasons why cotton-growing has spread into northwestern Texas is that in this region, where the winters are cold and dry, the boll weevil is not present.

Picking and ginning. The harvesting of the cotton crop has always been laborious, for the cotton bolls are picked by hand, and this is slow work. Recently several machines have been invented which can pick cotton more rapidly than men can. If they prove to be successful, they will be of great value to the cotton-farmers.

In the early days the seeds in the cotton bolls had to be separated from the fiber by hand. This was very slow work, for one man could pick the seeds from only about a pound of fiber in a day. Then, in 1792, the *cotton gin* was invented. The first gin was very small and was worked by hand, but it opened the way to a period of great growth in the entire cotton industry. After its invention, and as it was improved and perfected, the farmers in the Southern States produced cotton in larger and larger quantities. Manufacturers in this country built more cotton mills, and larger amounts of cotton were shipped to England, France, and Germany. The modern cotton gin is a large machine which separates the seeds from the fibers so quickly that it does as much work in a day as hundreds of men could do.

Shipments of cotton. Railroads are used for shipping some of the cotton to the manufacturing regions of the northeastern part of our country. River boats and railroads are used for carrying cotton to the seaboard, and ocean ships transport it to New England, old England and other countries in western Europe, and to Japan. England buys large quantities of cotton from the United States, and Liverpool and Manchester in England are ports to which much of our exported cotton goes. Houston, Galveston, New Orleans, Savannah, Charleston, Mobile, Corpus Christi, Norfolk, and Wilmington are the chief cotton-shipping ports. In most years more than 50 per cent of all the cotton produced in the United States is sold in foreign countries, and the best customers for it are Germany, Great Britain, Japan, France, and Italy.

Cottonseed. For many years the cotton seeds were considered a waste product and were thrown away. Then men discovered that they could make a very useful oil by pressing or crushing cottonseed. We now often use cottonseed oil in place of lard or of olive oil, and also to make substitutes for butter. After the oil is pressed out of the cottonseed, the part that remains is called cottonseed cake. The cake, when ground into meal, makes a valuable food for cattle. A large part of the cottonseed cake is exported to Germany, the Netherlands, Denmark, and other dairy countries of Europe.

The importance of cotton. Since so many people throughout the Southern States raise cotton, the prosperity of that part of the country depends very largely upon the amount of cotton which the farmers can produce and the price which they are able to get for it.

Cotton is by far the most important fiber used in making clothing, and it has many other uses. Therefore cotton is being raised in many parts of the earth where the climate is warm enough for its growth. India and China rank next to the United States in the production of raw cotton, and India is our leading competitor in world trade in the poorer grades of cotton. Our greatest competitor in the better grades is Egypt, which ranks fourth in cotton production. The Chinese use so much of their cotton crop at home that their exports are comparatively small.

Some cotton questions. 1. Where is the cotton belt in the United States? 2. Why does it not extend farther north? 3. Why does it not extend farther west? 4. Why does it not include the Florida peninsula? 5. Name and locate the Southern seaports from which cotton is shipped in large quantities. 6. What use is made of the cottonseed? 7. What countries buy large quantities of our cotton? 8. What countries compete with us in world trade in cotton?

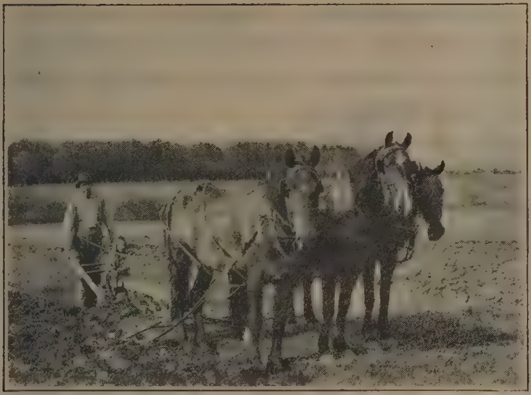


Figure 368. Plowing in the old-fashioned way. The farmer is using three horses to draw a plow which opens up one furrow in the soil at a time.

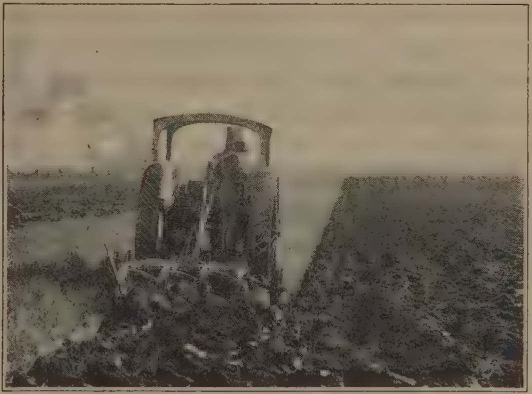


Figure 369. Plowing in the modern way. The tractor is drawing a plow which opens up four furrows in the soil each time it crosses the field.

3. Opening the Central Plains

When pioneers from the north Atlantic seaboard pushed westward through the Appalachian Mountains, they came into the Central Plains, in the upper Mississippi Valley. Most of this region is covered with fertile glacial soils. It is a level or gently rolling region, where the rainfall ranges from 20 to 50 inches a year and where all other conditions needed for successful farming are present. It is one of the world's great farming regions, where wonderful improvements in agriculture have been made,—improvements which are influencing farming in many other countries. As you study this section you will learn how these improvements have come about.

The invention of farm machinery. The farmers of the Central Plains wanted to cultivate more and more of this wonderfully fertile land, but there were not men enough to carry on the farm work if it was all to be done by hand. The opportunities were most attractive, and it is not strange that men living in this farming region and seeing the need of better farming tools turned their attention to the invention of one tool or machine after another. *See Figures 368 and 369.*

At South Bend, Indiana, there was a very able Scotch blacksmith who happened upon a way of making a chilled-steel point for a plow. When this plow went into use, the farmers found that it would turn the soil even where there were bowlders without breaking or bending. It was wonderfully successful, and the blacksmith sold his plows as fast as he could make them. Today in the city of South Bend his son and grandsons are manufacturing plows by thousands, and these plows are used not only in the farming regions of the United States but in many of the other farming regions of the world.

In Chicago there was a man at work perfecting mowing machines, harvesters, threshing machines, and many other labor-saving implements for farmers. Today members of his family are part owners in the business which he founded; and from the factories and mills which he helped to build, machines are now sent to all the more important farming countries of the world.

At Laporte, Indiana, Racine, Wisconsin, Moline, Illinois, and Detroit, Michigan, various kinds of machines were invented for the farmers. One man after another perfected machines for mowing, for cutting and binding grain, for threshing the grain, for loading hay, for plowing and harrowing the soil, for planting seeds, for scattering fertilizer, for harvesting corn, and even for shelling corn.

At no other time in the history of the world have so many wonderful machines for farmers been invented as in the Central Plains of our country while the farm lands there were being developed. These inventions have not only helped the farmers in the United States; the machines have been sent to most of the farming regions of the world, and they are serving the farmers in all progressive countries which have large, level tracts of farm land on which machines can be used.

Automobiles and tractors. In recent years automobiles and tractors have been added to the long list of machines that help the farmer. They have saved the horses from much of the hard work which they formerly did, and in many cases have made their use unnecessary.

The automobile has saved time for the farmer in taking his crops to market and has made it possible for him and the members of his family to visit among friends or go to town easily and frequently. It has broadened the opportunities of the farmers and made life more enjoyable in the country. The tractors have made it easier for the farmer to cultivate large areas of land.

Extensive farming. The invention of labor-saving machines led to what is called the extensive type of farming. That means that the farmer cultivates a large area of land. He may not produce so many bushels of corn or wheat or oats per acre as those who work intensively, like gardeners, in some of the older countries of Europe and Asia; but his work is much easier than theirs, and he produces much more wealth.

The four countries that lead in the production of agricultural crops are the United States, the Soviet Union, China, and India. At present the production in the United States is greater than in any other country, and one of the reasons for our great production is the use of modern machinery and the development of extensive farming. Our farmers are driving larger teams, using better machinery, more tractors, more automobile trucks, and producing more per acre and more per person than ever before.

All our farmers and farm laborers taken together are probably less than 4 per cent of the farmers and farm laborers of the world, and yet they produce 60 per cent of the world's corn, over 50 per cent of the world's cotton, 30 per cent of the world's tobacco, about 25 per cent of the world's oats and hay, nearly 20 per cent of the world's wheat, 17 per cent of the world's barley, 6 per cent of the world's potatoes, but only 3 per cent of the world's sugar, about 2 per cent of the world's rye, and 1 per cent of the world's rice.

The average production of grains per person engaged in agriculture in the United States is about 15 tons, while for the rest of the world it is only about 1.5 tons. Each American farmer and each farm laborer in this country, on the average, is feeding eleven people other than himself in this country and one person in some foreign land.

Farming in the grasslands. In the early days of settlement in the Central Plains the people thought the best soils for farming were where the forests grew. Because of this and the fact that the forests provided fuel, the settlers preferred to live in or near the forests, and so they did all the hard work of clearing away the trees and stumps in order to get lands that they could cultivate. In those days it was not uncommon for settlers to burn huge piles of hardwood trees that they had cut down. Today such trees are worth a great deal of money, but at that time there was no easy way to get the logs sawed or taken to market.

The early settlers stayed away from the grasslands partly because they did not know how to get water for themselves and for their stock in the grassy plains. But in time men learned to dig deeper wells, drilling machinery was invented, and the farmers could get water from depths of 100 feet or more. Then came the demand for windmills to pump the water from the wells. A young college graduate, who was born and brought up on a farm in Iowa and who lived in Chicago, invented a light metal windmill which was easy to erect and easy to keep in repair. His windmill proved to be a great success, and he sold thousands of them each year in all parts of the new farming country. Then farmers who were farther away heard of this invention, and orders came in from more distant parts of the country and later from the great farming lands in distant continents.

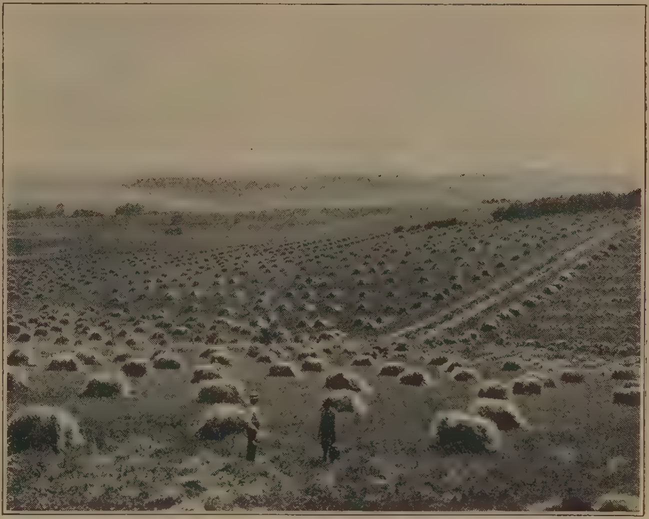

Herbert Photos, Inc.

Figure 370. A wheat field in Nebraska. The wheat has been harvested and is ready for threshing. Wheat needs less moisture than corn and can therefore be grown in drier regions.

Something to do. Make a set of graphs showing what proportion the United States produces of the world's supply each year of (1) corn, 3/5
1/2+ (2) cotton, (3) tobacco, 3/10 (4) oats, 1/4 (5) wheat, (6) barley, 17/100 (7) potatoes, 3/50 (8) sugar, 3/100 (9) rye, 1/50 and (10) rice. 1/100 Use the figures given in the second column on page 374.

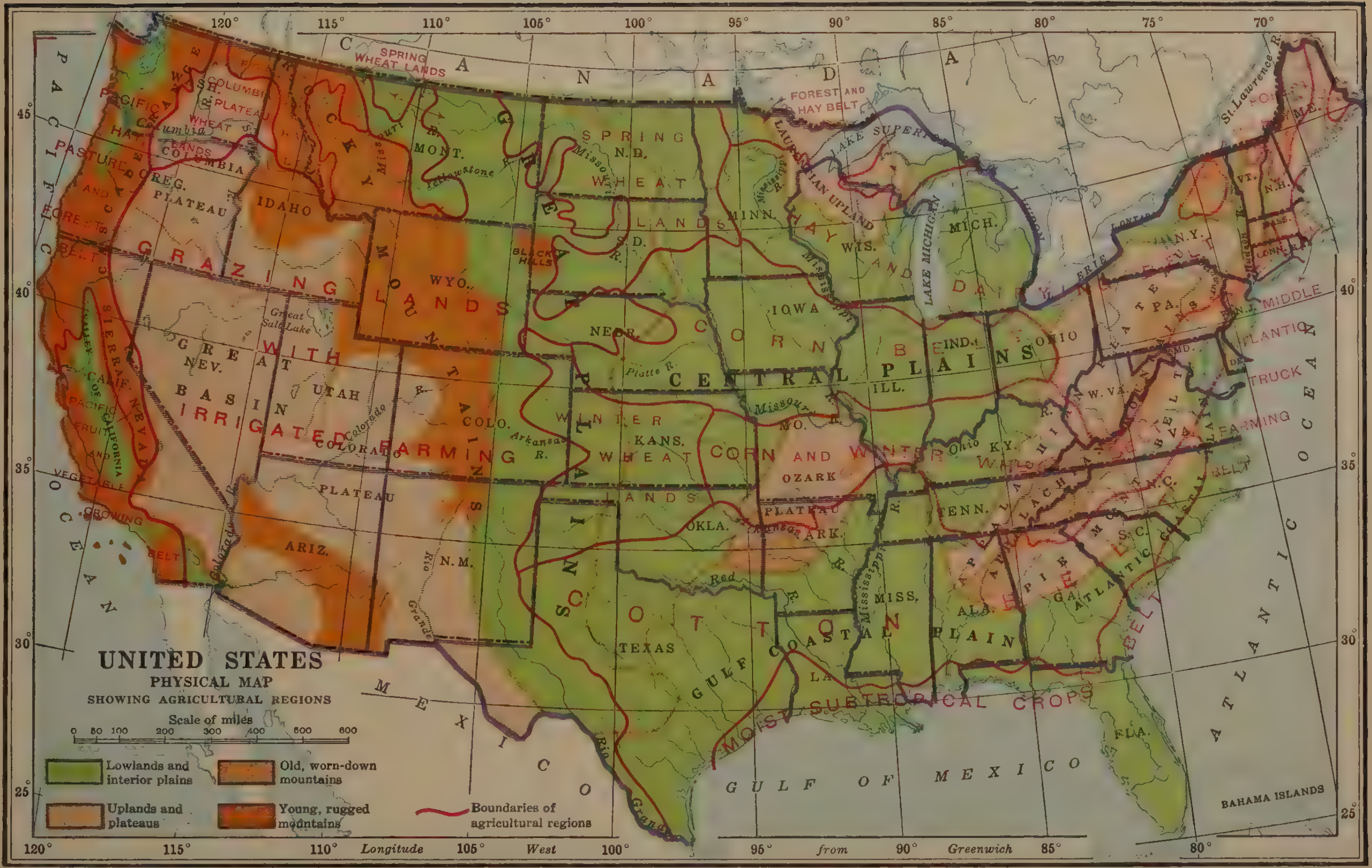
Class project. By coöperative work collect and mount pictures of the farming implements and machines used in this country. Print a legend under each picture telling the purpose for which the machine or implement is used and how it saves time for the farmer.

4. THE GREAT CROP BELTS

With the growth of agriculture in the Central Plains the farmers have found that it is profitable to produce certain crops in certain regions. You have already studied about the cotton belt of the South. As you read about the crop belts farther north, locate them on the map on page 376. First of all, find the wheat lands of the United States. In what natural regions are they located? Find the corn and winter-wheat belt. What states have a share in this belt?

Wheat lands. In most of the warmer wheat-growing lands of the country, especially in Kansas and Oklahoma, and eastward in about the same latitude, through the corn and winter-wheat belt, *winter wheat* is grown. It is planted in autumn, and it comes up above the surface of the ground before winter, but it does not grow much during the cold months. In the spring it starts growing again and produces a good harvest in the early summer. In the moister eastern part of the winter-wheat lands, and in the corn and winter-wheat belt, large quantities of corn are grown in addition to wheat. *See Figures 370 and 371.*

In Minnesota and the Dakotas, and in Montana, winter wheat cannot endure the winter cold and produce a profitable crop; so in this northern part of our country the wheat is planted in the spring and harvested in the summer season. This is called *spring wheat.* Other important wheat lands are found in the Columbia Plateau of eastern Washington and Oregon and northern Idaho. There both winter wheat and spring wheat are grown.



UNITED STATES
PHYSICAL MAP
SHOWING AGRICULTURAL REGIONS

Scale of miles
0 50 100 200 300 400 500 600
🟩 Lowlands and interior plains
▨ Old, worn-down mountains
▨ Uplands and plateaus
🟥 Young, rugged mountains
Boundaries of agricultural regions
Longitude West from Greenwich
120° 115° 110° 105° 100° 95° 90° 85° 80° 75° 70°
45° 40° 35° 30° 25°
CANADA
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
MEXICO
BAHAMA ISLANDS
SPRING WHEAT LANDS
FOREST AND HAY BELT
PACIFIC HAY PASTURE AND FOREST BELT
COLUMBIA PLATEAU WHEAT LANDS
GRAZING LANDS
ROCKY MOUNTAINS
GREAT PLAINS
GREAT BASIN
IRRIGATED FARMING
WITH
SPRING WHEAT LANDS
CORN BELT
CENTRAL PLAINS
HAY AND DAIRYING
CORN AND WINTER WHEAT
WINTER WHEAT LANDS
COTTON BELT
GULF COASTAL PLAIN
ATLANTIC COASTAL PLAIN
PIEDMONT
APPALACHIAN
OZARK PLATEAU
LAURENTIAN UPLAND
MIDDLE ATLANTIC TRUCK FARMING BELT
MOIST SUBTROPICAL CROPS
VALLEY OF CALIFORNIA
CALIF. PACIFIC FRUIT AND VEGETABLE GROWING BELT
SIERRA NEVADA
COLUMBIA PLATEAU
WASH.
OREG.
IDAHO
MONT.
WYO.
NEV.
UTAH
COLO.
ARIZ.
N. M.
N. D.
S. D.
NEBR.
KANS.
OKLA.
TEXAS
MINN.
IOWA
MO.
ARK.
LA.
WIS.
ILL.
MISS.
MICH.
IND.
KY.
TENN.
ALA.
OHIO
W. VA.
VA.
N. C.
S. C.
GA.
FLA.
PA.
MD.
DE.
N. J.
N. Y.
VT.
N. H.
ME.
MASS.
CONN.
R. I.
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
LAKE ONTARIO
St. Lawrence R.
Hudson R.
Columbia R.
Missouri R.
Yellowstone R.
Platte R.
Arkansas R.
Red R.
Mississippi R.
Ohio R.
Colorado R.
Rio Grande
Great Salt Lake
BLACK HILLS

Agricultural regions adapted from map by O. E. Baker of U. S. Bureau of Agricultural Economics

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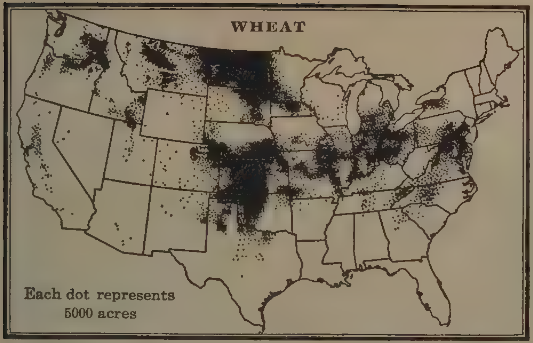
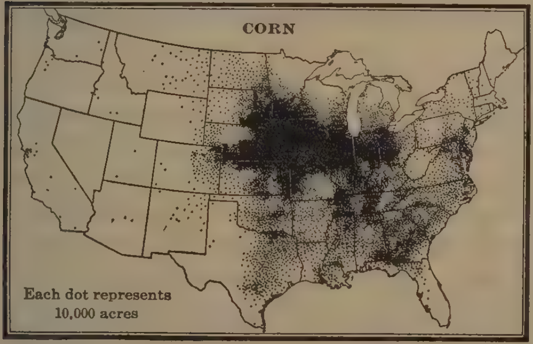

WHEAT
Each dot represents
5000 acres

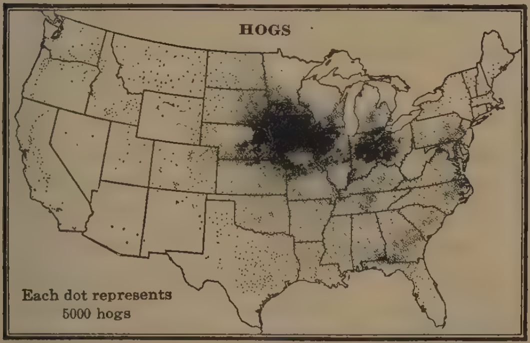
U.S. Department of Agriculture

Figure 371. A map showing where wheat is grown in the United States. Judging from this map, what two states do you think are the leaders in wheat production? Check your answer by Table 4 on page 513.


CORN
Each dot represents
10,000 acres

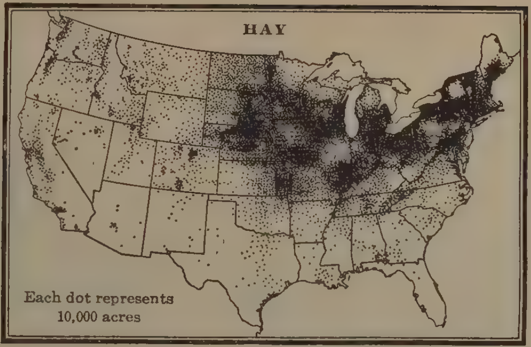
U.S. Department of Agriculture

Figure 372. A map showing where corn is grown in the United States. Why is so little corn grown in the West? What states do you think lead in corn production? Check your answer by Table 5 on page 513.


HOGS
Each dot represents
5000 hogs

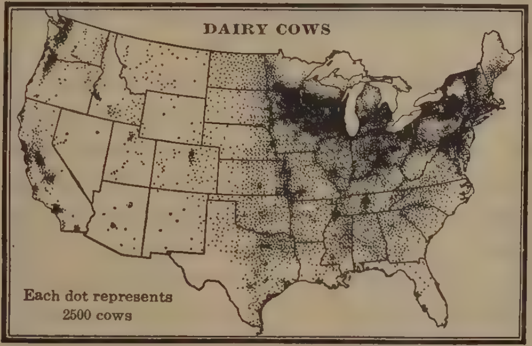
U.S. Department of Agriculture

Figure 373. A map showing where hogs are raised in the United States. Compare this map with Figure 372. What reasons can you give for the fact that such large numbers of hogs are raised in the corn belt?


HAY
Each dot represents
10,000 acres

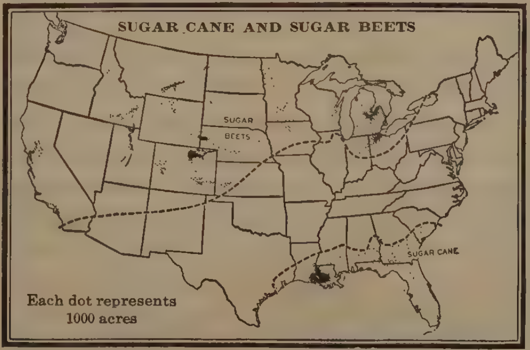
U.S. Department of Agriculture

Figure 374. A map showing where hay is grown in the United States. Hay grows best in regions that are cool and moist. How does that help to explain the distribution of our hay crops as shown on this map?


DAIRY COWS
Each dot represents
2500 cows

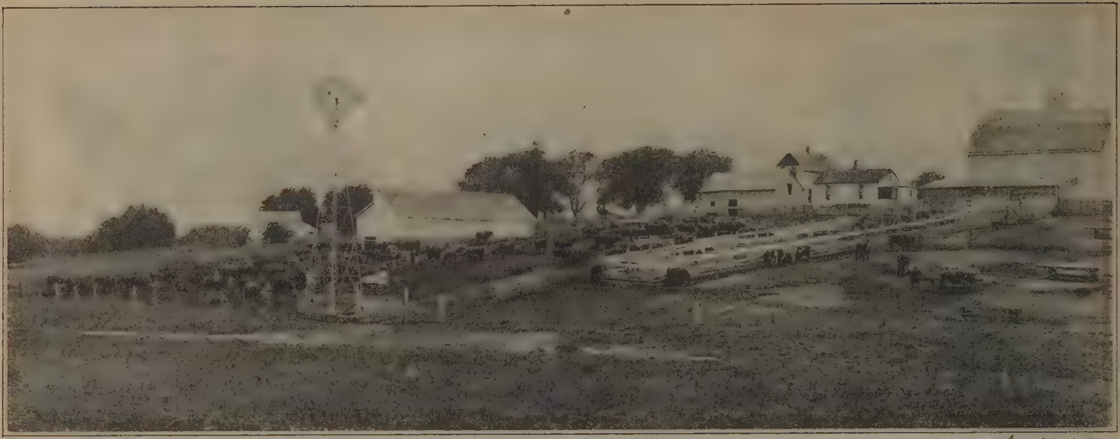
U.S. Department of Agriculture

Figure 375. A map showing the distribution of dairy cows in the United States. What likenesses can you discover between this map and Figure 374? What relationship is there between hay and dairy farming?


SUGAR CANE AND SUGAR BEETS
SUGAR
BEETS
SUGAR CANE
Each dot represents
1000 acres

U.S. Department of Agriculture

Figure 376. A map showing where sugar cane and sugar beets are grown in the United States. Where is the most sugar cane grown? Notice the large acreage of sugar beets on the irrigated lands of the West.



U. S. Department of Agriculture

Figure 377. A farm in the corn belt where beef cattle from ranches farther west are fattened for market. The corn-belt farmers buy the "feeders," as the cattle are called, in the autumn or early winter after the corn has been harvested, and feed them until they are ready to be sold to the meat-packing companies.

Our exports of wheat. Wheat is one of the most important food crops in the world, and we produce so much of this grain that we can export over a hundred million bushels a year. The United States is one of several countries which produce much more wheat than they need. Others are Canada, Argentina, and Australia.

The chief countries that import large quantities of wheat are Great Britain, Germany, Italy, France, Belgium, the Netherlands, and Brazil. A large part of the wheat exported from the United States goes to the British Isles.

The corn belt. The map on page 376 shows that the corn belt extends from northern Kansas, Nebraska, and southeastern South Dakota, eastward through Iowa, northern Missouri, Illinois, and Indiana, to the margin of the rougher land of the Appalachian Plateau in Ohio. In this belt about one third of the world's supply of corn is produced. Corn is grown in many other parts of the country where conditions are less favorable than in the corn belt, but it cannot be grown everywhere. Corn needs an annual rainfall of from 20 to 60 inches and an annual frost-free season of one hundred and twenty days or more. It needs warm summer days and warm nights. Most of the corn is raised where the summer temperature at night does not go below 55° Fahrenheit. As corn decreases to the north, oats and barley or wheat or hay increase in importance. *See Figure 372.*

West of the corn belt the rainfall is too light or the nights are too cool for corn. In the Southern States corn is grown in large quantities in the cotton belt, but in much of this belt less land is used for corn than for cotton.

The crop belts do not show all the places where a crop is grown. They simply show us where a certain crop is generally more important than any other one crop. The farmers in each of the great crop belts raise a variety of crops. They decided long ago that "it is not wise to have all your eggs in one basket." Most of the farmers raise some vegetables for home use, some live stock, and some fruits.

Changing corn into meat. Most of the farmers in the corn belt use their corn in fattening live stock for the market. The corn belt is itself a great live-stock producing region, especially for hogs and cattle, and in addition the farmers buy cattle and sheep from the ranchmen in the states farther west and fatten them for market. *See Figures 373 and 377.*

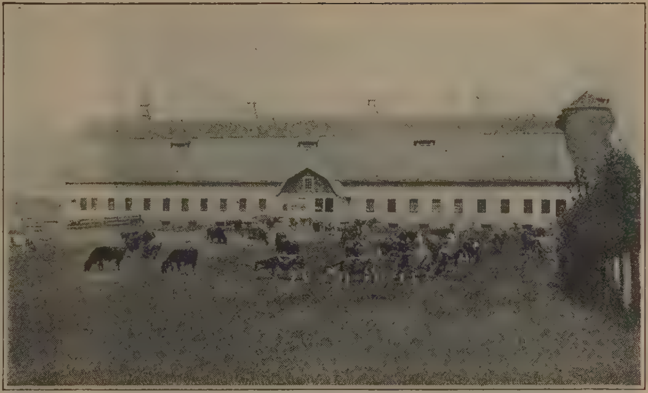


Figure 378. A dairy herd in Minnesota. Notice that the barn is large and well lighted and ventilated, and that it has silos for ensilage, or green feed, and storage space for hay.

Corn is our largest crop; but it is a heavy and bulky product to ship, and therefore but little of it leaves the farms in the form of grain. It is estimated that when fed to cattle it takes 10 to 12 pounds of corn to make 1 pound of beef, and when fed to hogs 5 to 6 pounds make 1 pound of pork. The corn-belt farmers who keep cattle or hogs or both sell the live animals, and the animals bring in more money than the corn would. Much corn therefore goes to the city markets in the form of meat, and some of it is shipped in that form to Europe.

The hay and dairying belt. Extending from Minnesota through the region of the Great Lakes and eastward through New York into New England is the hay and dairying belt where dairy farming is very important. Much of the land in New York and New England is too hilly for extensive farming with machinery, but the cool summer climate and the rich pastures are just right for producing milk of a uniform high quality. The quality of the milk is better than in districts of warm temperature. There are few cheese factories where the average summer temperatures are much over 70° Fahrenheit. Nearly all the cheese factories, most of the large creameries, or butter factories, and most of the factories where condensed milk and cream are prepared and canned are in the hay and dairying belt. *See Figures 374, 375, and 378.*

In certain parts of the hay and dairying belt the farmers raise large quantities of certain crops to which the climate and the soil are especially well suited. Among these crops are potatoes, which are grown in many parts of the belt, from eastern Maine to Minnesota. In the lower peninsula of Michigan large quantities of sugar beets are raised which help to supply our needs for sugar.

The subtropical-crops belt. If you visit certain sections of our Southern States, you will see crops of oranges, grapefruit, sugar cane, and rice growing. Such crops characterize many of the farm lands in the lowlands all the way around the world between the tropic of Cancer and the tropic of Capricorn. They are crops that are commonly grown in the warmer farm lands of the world.

Our Southern States are not in the belt between the tropics, but they are so near that belt that the climate of the lowlands bordering the Gulf of Mexico is much like the climate a little farther south. The location and climate of these lowlands can be described as subtropical, or nearly tropical.

Florida has developed the citrus-fruit business in response to an ever increasing demand from the rest of the country. There is scarcely a person in the United States who has not often enjoyed an orange or a grapefruit that was grown in Florida. *See Figure 379.*

More than half of all the rice raised in the United States is produced on the warm, well-watered coastal prairie lands of Louisiana

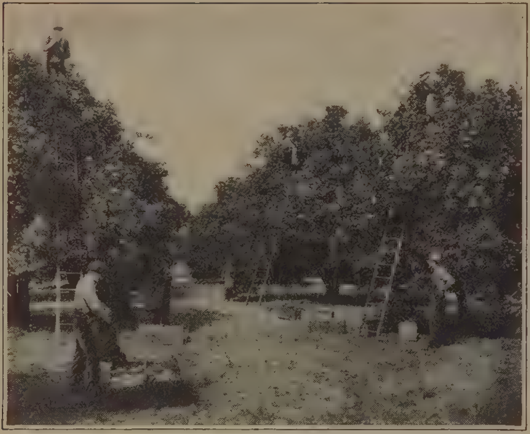


Figure 379. Picking oranges in Florida. Citrus fruits cannot safely be grown where there is much danger of frost. Why is Florida well suited to them?

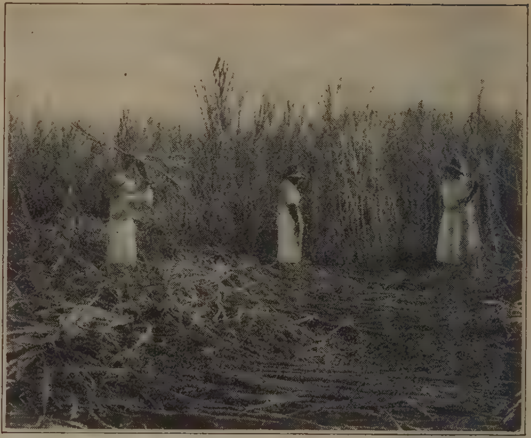


Figure 380. Harvesting sugar cane in Louisiana. The stalks of the cane are crushed to obtain the sweet juice from which the sugar is manufactured.

and Texas. Sugar cane is produced in all the states bordering the Gulf of Mexico, but only that which is grown on the lowlands of southern Louisiana is used to make sugar. The rest is used for sirup. Sugar cane needs 50 to 65 inches of rainfall and a warm climate. *See Figures 376 and 380.*

Some things to explain. 1. Explain what is meant by winter wheat; by spring wheat.

2. Explain why winter wheat is grown in Kansas and Oklahoma, while spring wheat is grown in the Dakotas and Montana.

3. Explain why the corn belt does not extend farther west.

4. Among the grains which enter world trade, corn is less important than wheat. Give reasons for this fact.

5. Explain why the corn belt is a great meat-producing belt.

6. Prove by the map on page 376 that much of the land in the hay and dairying belt is hilly. Make a statement summing up the principal reasons why dairying is the most important kind of farming in that belt. Explain also why hay is the leading crop in the dairying belt.

7. Explain why sugar cane is grown only in the southern part of the United States.

8. Explain why large quantities of citrus fruits are grown in Florida.

5. INTENSIVE FARMING

While extensive farming was developing on a large scale in the Mississippi Valley and the valley of the Missouri, intensive farming was becoming more and more important near the centers of dense population. Usually city dwellers draw heavily upon the neighboring farm regions for vegetables, milk and cream, and oftentimes for berries and fruit. As means of transporting perishable foods have improved, it has become possible for cities to obtain such food supplies from more distant points, and therefore intensive farming has spread to places where formerly it would have been useless to carry it on. In this section we shall learn about various types of intensive farming.

Truck, poultry, and dairy farms. Vegetables are now raised in large quantities in market gardens on the outskirts of all our large cities, and the low coastal plain extending from Long Island to Florida has become famous as a truck-farming region. Mile after mile of that low, sandy land is cultivated with great care, and large and valuable crops of vegetables and berries are produced there. Florida, southern Georgia, and southern Texas raise large quantities of winter vegetables for the Northern markets. *See Figure 381.*

It is chiefly because of the rapid growth of our cities, with their ever increasing demands for food, that large numbers of farmers have chosen to make the intensive production of vegetables or berries or orchard fruits their chief business. For the same reason many farmers near the cities have chosen to specialize in poultry farming or in dairying.

Special fruit-growing regions. In southern Michigan and along the southern shores of Lake Erie and Lake Ontario there are excellent fruit-growing regions, for the waters of the Great Lakes help to prevent frosts. All large bodies of water remain cool in spring and warm in autumn longer than the lands do. The winds that come over the lake waters to the lands delay the blooming of the fruit trees in the spring until the danger from frost is past, and often prevent frosts in autumn, thus giving the fruit a longer time to ripen. Near the Lakes, apples, peaches, pears, grapes, and other fruits are raised in large quantities. Peaches are more sensitive to cold than apples. They are raised in the Lake district, in the cotton belt, and in the corn and winter-wheat belt. Central Georgia has become famous as a peach district, and parts of Arkansas and Texas are producing this fruit in large quantities. The principal peach-growing state, however, is California.

The New England region has proved to be an excellent one in which to raise apples. Each year tons of New England apples are sent to other parts of this country and to old England.

Regions of irrigated crops. As immigrants and adventurers pushed their way into the western half of the country, some of them who were not particularly interested in mining or lumbering or hunting established homes in certain of the valleys where they could irrigate the lands. Little by little irrigated farming has spread until it is now carried on in many different places in the West. The irrigated lands are found chiefly along the larger rivers or at the base of mountains, where waters from mountain streams can be used to irrigate crops. Irrigation is costly, and therefore the farmers use the land intensively, raising large crops of many different kinds on a comparatively small acreage. Many irrigation farmers grow excellent fruits which find markets in all parts of the country. Apples and other fruits from some of the irrigated valleys of Colorado, Utah, Montana, Washington, Oregon, and California are especially well known.

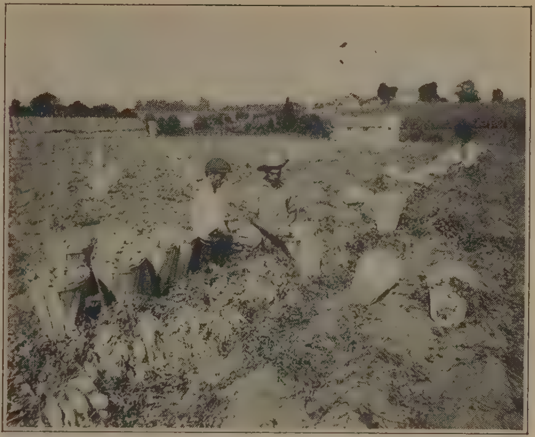
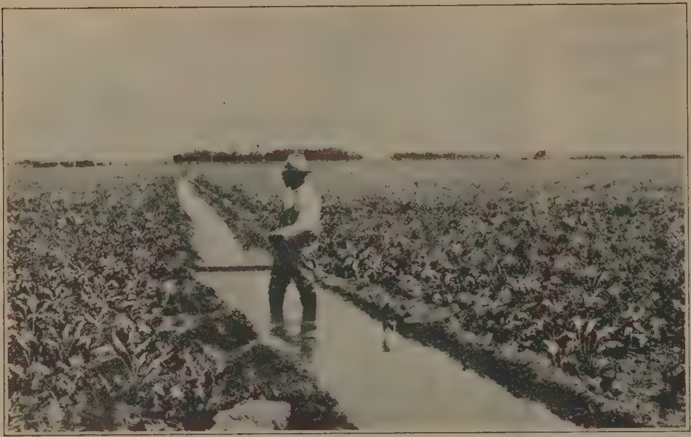


Figure 381. Harvesting sweet potatoes in New Jersey. The sandy soils of the coastal plain of New Jersey are especially well suited to potato-growing.

Irrigation is the result of man's dissatisfaction with the amount and distribution of rainfall. Irrigated farming is an intensive and expensive type of agriculture; but where the crop to be raised is a valuable or much needed one, it is a very fortunate thing to be able to irrigate. *See Figure 382.*

The map on page 387 shows the chief areas in the West which are irrigated today. Study their distribution carefully. The amount of additional land that can be irrigated has been estimated by experts in the Department of Agriculture at Washington to be about equal to the amount that has already been irrigated.



U.S. Department of Agriculture

Figure 382. An irrigated field of sugar beets in Colorado. The man is standing in an irrigation ditch. One great advantage of irrigation is that crops receive the proper amount of water at the right time.

California fruits. Southern California with its delightful climate and days of sunshine has come to be a great citrus-fruit producing region, and central California is equally famous for its sun-dried fruits. From that state nearly every other state in the Union receives oranges, lemons, grapes, dates, figs, olives, prunes, and raisins.

Most of the groves and orchards of fruit trees in southern California are on the coastal lowlands near Los Angeles and along the slopes of the valley that extends inland as far as Redlands. Most of the orchards and vineyards of central California are in the central valley and in the smaller valleys between the Coast Ranges. The soils in these lowlands are deep and fairly fertile, and most of the fruit-growers irrigate and fertilize their crops by the most modern methods.

Occasionally, even in southern California, there are frosts, for the cold air from the mountains flows down into the valley lowlands. This makes it necessary for the fruit-growers to use special means to keep frosts from injuring the buds, blossoms, or fruit. Their special problem is to warm the air in the orchards and groves and thus prevent frosts. When frosts are expected, many small fires are lighted in orchard heaters.

There are few places in the world where the climate is so favorable for drying fruits in the open air as in the Valley of California and the coastal valleys north and south of San Francisco. Large quantities of grapes are put out in the sunshine on trays to dry until they become what we call raisins, and large quantities of prunes, apricots, peaches, and figs are dried in the same way. Drying preserves the fruits, and in the dried form they can be shipped to all parts of this country and to other parts of the world. *See Figure 383.*

Sentences to complete. 1. Market gardens for vegetables, dairy farms, and poultry farms are found near all our large cities because ________ ____.

2. Our greatest truck-farming region is along the Atlantic coast because ________________.

3. Southern truck farmers find good markets for their crops in the North in winter because ________________________________.

4. Certain parts of the shores of the Great Lakes are famous fruit growing regions because ________________________________.

5. Most of our irrigated lands are in the west because ________________________________.

6. Two important crops of the irrigated lands are crabs and _____ fruits.

7. California is a great fruit growing state because ________________________________.

8. California is famous for its sun-dried fruits, especially grapes, prunes, apricots, figs, and peaches.

Committee work. 1. Find out (*a*) what five crops lead in value in your state; (*b*) where and how they are grown; and (*c*) how they are used.

2. If you live in a large city, find out where its summer and winter supplies of fresh vegetables come from.

6. CAN WE INCREASE THE PRODUCTION OF FOOD CROPS?

This may be an important question in the United States as the population increases. Our farm lands are not yet crowded as the lands are in many of the older countries of the world, but nevertheless most of our better farming land is now in use.

Fifty years ago an American citizen could go out into the western part of our country and apply for good land which he might secure on very easy terms from the United States government. While this is no longer true, there are several other ways in which we can increase our production of food crops as the population comes to need it.

More land for cultivation. Although the best land is already cultivated, there are many millions of acres now lying idle which can be used for crops if necessary. Some of the poorer woodlands and some of the cut-over areas can be cleared. Large areas of swampy lands in Florida, in the flood plain of the Mississippi River and other valleys in the Gulf Coastal Plain, and in the Lake states can be drained, and more land can be irrigated. Some of the stony and hilly lands may be planted to orchards or used as pastures. All these are ways of increasing our farm acreage.

More intensive cultivation of present farm lands. But we could produce all the food we shall need for many years to come on the amount of land now under cultivation. To do this we need to improve the fertility of our lands still further and to use more careful methods of agriculture, so that each acre of land will produce more food. Many of our farmers have been very successful in increasing the production per acre on their lands, but the average yield per acre in the United States is below that in many of the older countries. For example, while we produce on the average a little less than 15 bushels of wheat per acre, Belgium produces nearly 40 bushels per acre; in fact, nearly all the countries of northwestern Europe produce more per acre than we do.

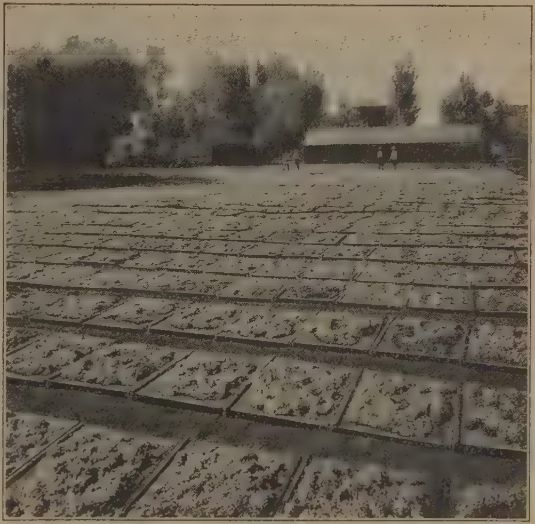


Figure 383. Drying raisin grapes in California. Why is the Valley of California so well suited to the sun-drying of fruits? *See Figure 361 (p. 366).*

By practicing more intensive cultivation, by using greater quantities of fertilizers, and by taking advantage of scientific discoveries, the production per acre of the leading food crops of the United States can be increased greatly. This will mean a better use of the better lands.

The size of the farms today. The size of farms in the United States varies with the kind of farming that the people do. Where intensive truck farming or gardening is practiced the individual farmer may use from 5 to 10 acres, and provide very well for his family; where fruit is raised he may need from 10 to 20 acres or more. In general, the irrigated farms of the West are larger than the farms of the East on which intensive farming is practiced.

In the regions where farming is extensive rather than intensive, the farms are large, and the largest ones of all are chiefly in the regions where dry farming is carried on. There some of the farms cover as much as 2400 acres.

Questions for class discussion. 1. Why is the cultivation of the soil so important to the welfare of a nation? 2. How may the amount of land available for farms in our country be increased? 3. How may the production of food crops per acre be increased? 4. Which is the wiser plan for the present — to increase the area of our cultivated land, or to make better use of the land now under cultivation? Why?

Special credit questions. Find out the answers to the following questions and report on them.

1. What kinds of soil are there in the vicinity of your home? 2. How deep are they? 3. Are they being fertilized? If so, how? 4. What are the chief farm products of your home region?

7. SUMMARY OF FOREIGN TRADE IN FARM PRODUCTS

At the opening of this chapter you learned of the six chief food products that we import from other countries. What are they? During your study of the chapter you have discovered that we produce certain farm products in such large quantities that we have a surplus for export. Do you know what countries buy them?

Our chief exports of farm products. From 80 to 85 per cent of all the crops produced in the United States are used in this country, and from 15 to 20 per cent are sent abroad. Of all that are sent away, cotton makes up about 45 per cent of the total value and bread grains about 20 per cent. Next in the order of value are tobacco and fruit.

The countries of western Europe are the best customers for our surplus farm products. Great Britain has developed an immense cotton-manufacturing business, and has a very large population of industrial workers. The British people are not able to produce any cotton in the cool, moist islands where they live, and they produce only about half of the total amount of food which they need. For these reasons the British have long been one of our best customers for raw cotton and for wheat and other bread grains. *See Figure 384.*

Germany, France, Italy, the Netherlands, and Belgium also provide good markets for our farm products. Next to Great Britain, Germany is the country to which we ship the greatest quantities of foodstuffs. Much food is also sent to the Netherlands to be reshipped to other countries in continental Europe. Most of the American leaf tobacco that enters into foreign trade is sold in Great Britain and other countries of western Europe.

Our chief imports of foodstuffs. A small amount of coffee is raised in our territories of Porto Rico and Hawaii, but two thirds of our coffee is imported from Brazil, and most of the remainder from other countries in South America or Central America. In the United States we use about 12 pounds of coffee per person each year. That is a tremendous amount of coffee and represents a very large import business. Most of the tea used in the United States comes from Ceylon, Japan, India, and China. We use on the average less than 1 pound per person each year.

As a people we consume a very large amount of sugar. The amount produced in the United States proper and in Hawaii, Porto Rico, and the Philippines is only half enough to satisfy the demand, and large quantities are therefore imported from Cuba. We might, however, greatly increase our production of beet sugar in the United States.

We receive most of our cocoa from British West Africa, and much smaller quantities from Brazil and the West Indies. The bulk of our supply of bananas comes from Central America and the West Indies. Among the vegetable oils that we import, coconut oil from the Philippines is the most important.

From this summary of food imports it may be seen that the United States depends upon foreign countries for very few articles of food that are of real importance, and that most of those are supplied by countries in the Western Hemisphere.

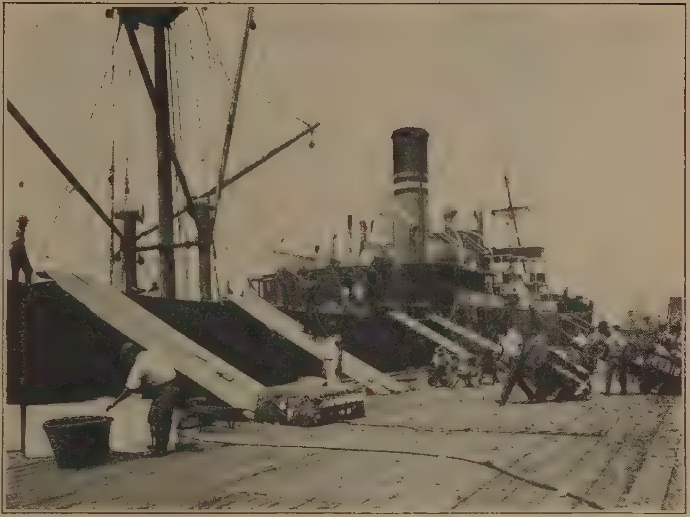
Sentences to complete. 1. Our most valuable export product is -------.

2. The countries of northwestern Europe are our best customers for farm products because ---------.

3. Cuba and our tropical possessions supply us with large quantities of ------.

4. Brazil supplies us with large quantities of ------.

5. Most of our tea comes from countries in ----.



Courtesy of Chamber of Commerce, Galveston, Texas

Figure 384. An ocean freighter being loaded with cotton at Galveston. Germany is the country which now buys the most cotton from us, and the next best customers for it are Great Britain and Japan.

An agricultural exhibit. Try to get samples of wheat, corn, oats, rice, and other grains grown in the United States, and of cotton, sugar, and leaf tobacco. Glue them on a large outline map of the United States in the regions where they are produced in largest quantities. Make a collection of pictures of the more important fruits grown in our country, and paste them on the map in the proper locations.

Matching crops and states. Each state listed in the first column below leads in the production of one of the crops listed in the second column. Match the crops and states correctly.

California
Iowa
Kansas
North Carolina
Texas

corn
cotton
fruit
tobacco
wheat

Some graphs to make. Using Tables 4, 5, and 6 (p. 513), make three graphs, as follows:

1. A graph showing the quantity of wheat grown in each of the states which produce more than 50 million bushels a year.

2. A graph showing the quantity of corn grown in each of the states which produce more than 150 million bushels a year.

3. A graph showing the quantity of cotton grown in each of the states which produce more than 1 million bales a year.

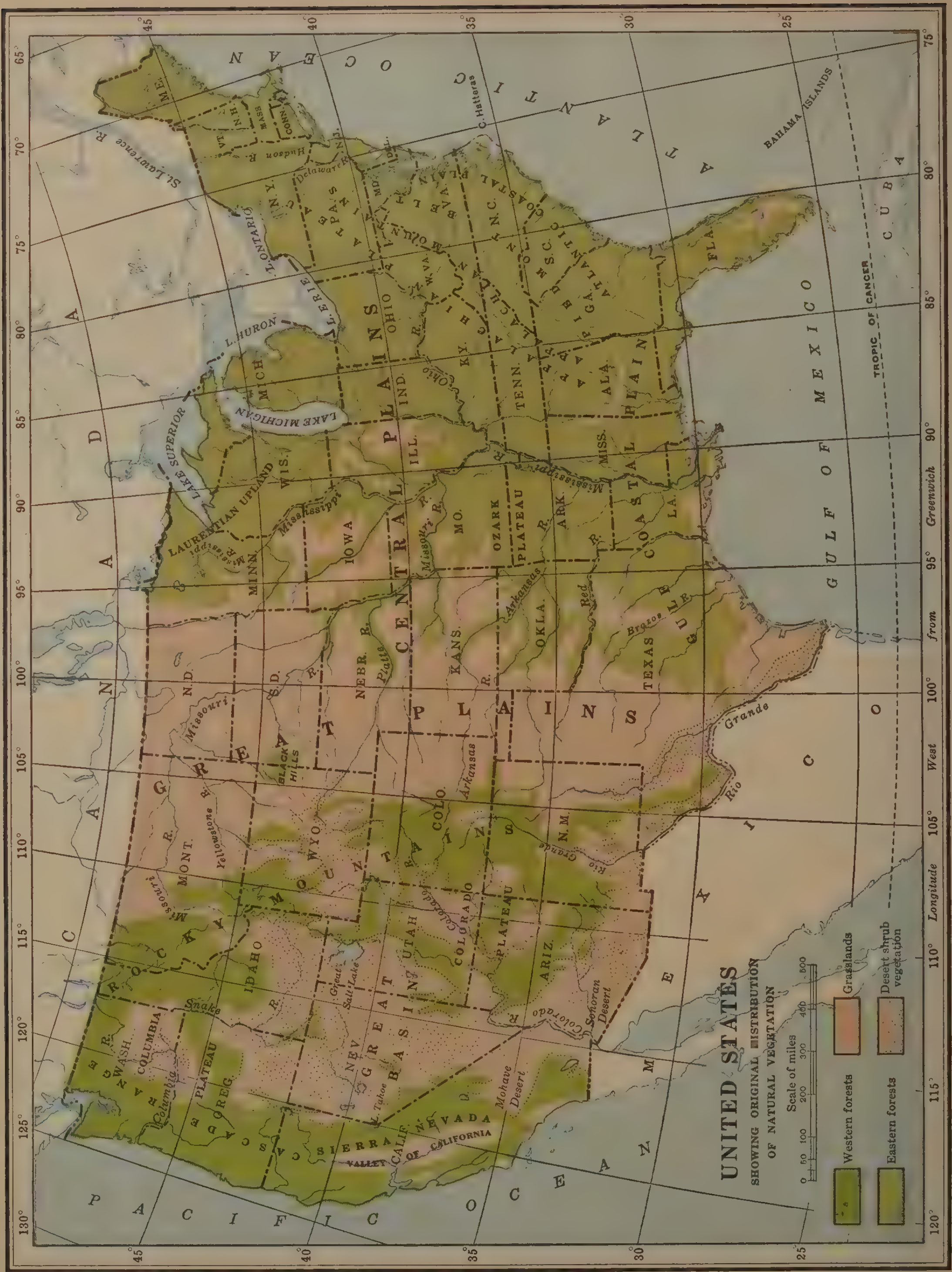
Some crop questions. 1. Locate the five leading corn-growing states on the map on page 376. What reasons can you give for their large production of corn? Which one of the five states is almost wholly in the corn belt? What rank does that state hold in corn production?

2. Locate the six leading cotton-growing states on the map on page 376. How many reasons can you give for their high rank in cotton production? What reasons can you give for the fact that Texas produces more cotton than any other state? Why does Louisiana not appear among the six leading cotton states?

3. Locate the five leading wheat-growing states on the map on page 376. Which one of them is a winter-wheat state? Which two are spring-wheat states? Which two produce both spring wheat and winter wheat?

Topics for classroom discussion. 1. What geographic conditions favor farming? 2. Where are the best farm lands in the United States? 3. In what ways may the fertility of the soils be maintained? 4. Why have most of the farmers in New England given up the production of grains and live stock and turned to specialized types of intensive farming? 5. What are the advantages of the extensive type of farming? of the intensive type? 6. What difference would it make to us if we could not import food products? 7. What difference would it make to us if we could not export food products?

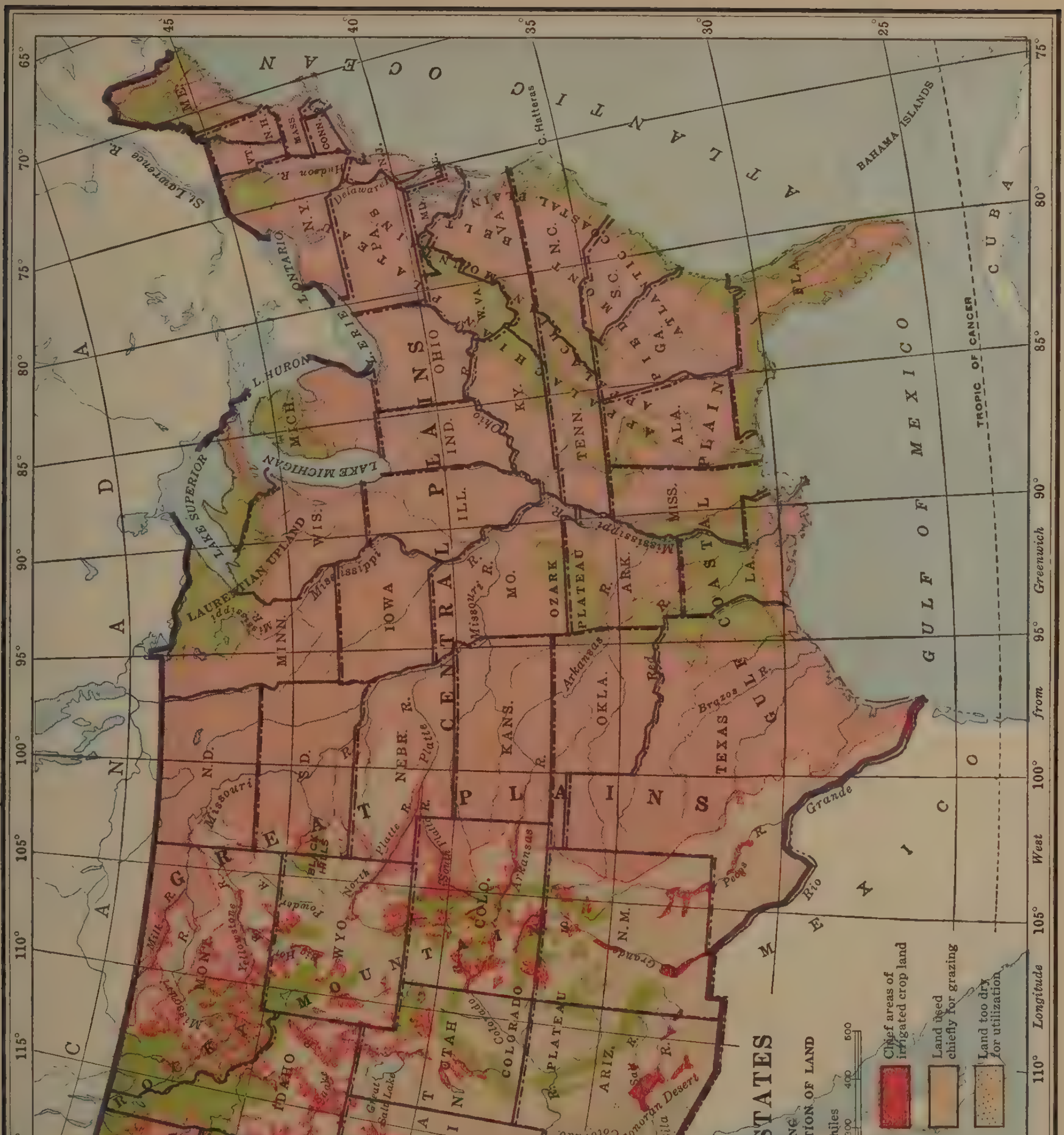
1, Mo
Iowa Ark S



UNITED STATES

SHOWING ORIGINAL DISTRIBUTION OF NATURAL VEGETATION

Scale of miles
0 50 100 200 300 400 500
Western forests
Eastern forests
Grasslands
Desert shrub vegetation
C A N A D A
A T L A N T I C O C E A N
P A C I F I C O C E A N
G U L F O F M E X I C O
M E X I C O
C U B A
BAHAMA ISLANDS
TROPIC OF CANCER
Longitude West from Greenwich
G R E A T C E N T R A L P L A I N S
G R E A T P L A I N S
R O C K Y M O U N T A I N S
G R E A T B A S I N
A P P A L A C H I A N M O U N T A I N S
A T L A N T I C C O A S T A L P L A I N
G U L F C O A S T A L P L A I N
P I E D M O N T B E L T
S I E R R A N E V A D A
C A S C A D E R A N G E
COLUMBIA PLATEAU
COLORADO PLATEAU
OZARK PLATEAU
LAURENTIAN UPLAND
VALLEY OF CALIFORNIA
BLACK HILLS
Mohave Desert
Sonoran Desert
ME.
N.H.
VT.
MASS.
CONN.
N.Y.
N.J.
PA.
DEL.
MD.
VA.
W.VA.
N.C.
S.C.
GA.
FLA.
OHIO
IND.
ILL.
MICH.
WIS.
MINN.
IOWA
MO.
KY.
TENN.
ALA.
MISS.
ARK.
LA.
TEXAS
OKLA.
KANS.
NEBR.
S.D.
N.D.
MONT.
WYO.
COLO.
N.M.
ARIZ.
UTAH
NEV.
CALIF.
OREG.
IDAHO
WASH.
L. ONTARIO
L. ERIE
L. HURON
LAKE MICHIGAN
LAKE SUPERIOR
Great Salt Lake
L. Tahoe
St. Lawrence R.
Hudson R.
Delaware R.
Ohio R.
Mississippi R.
Missouri R.
Platte R.
Arkansas R.
Red R.
Brazos R.
Rio Grande
Yellowstone R.
Snake R.
Columbia R.
Colorado R.
C. Hatteras
45
40
35
30
25
65°
70°
75°
80°
85°
90°
95°
100°
105°
110°
115°
120°
125°
130°



UNITED STATES

SHOWING

PRESENT UTILIZATION OF LAND

Scale of miles
0 50 100 200 300 400 500
Areas of the West having the greatest acreage of virgin forest
Areas of the East having the greatest acreage of virgin forest
Land used chiefly for crops
Chief areas of irrigated crop land
Land used chiefly for grazing
Land too dry for utilization
Longitude West from Greenwich
TROPIC OF CANCER
C A N A D A
A T L A N T I C O C E A N
P A C I F I C O C E A N
G U L F O F M E X I C O
M E X I C O
C U B A
BAHAMA ISLANDS
C. Hatteras
LAURENTIAN UPLAND
C E N T R A L P L A I N S
G R E A T P L A I N S
R O C K Y M O U N T A I N S
COLUMBIA PLATEAU
GREAT BASIN
COLORADO PLATEAU
OZARK PLATEAU
A P P A L A C H I A N
GULF COASTAL PLAIN
ATLANTIC COASTAL PLAIN
PIEDMONT
CASCADE R.
SIERRA NEVADA
COAST RANGE
VALLEY OF CALIFORNIA
Mohave Desert
Sonoran Desert
BLACK HILLS
LAKE SUPERIOR
LAKE MICHIGAN
L. HURON
L. ERIE
L. ONTARIO
Great Salt Lake
Tahoe
St. Lawrence R.
Hudson R.
Delaware R.
Ohio R.
Mississippi R.
Missouri R.
Platte R.
Arkansas R.
Red R.
Brazos R.
Rio Grande
Pecos R.
Colorado R.
Gila R.
Salt R.
Snake R.
Columbia R.
Yellowstone R.
Milk R.
Powder R.
ME. N.H. VT. MASS. CONN. N.Y. N.J. PA. MD. DEL. W.VA. VA. N.C. S.C. GA. FLA. OHIO IND. ILL. MICH. WIS. MINN. IOWA MO. KY. TENN. ALA. MISS. ARK. LA. N.D. S.D. NEBR. KANS. OKLA. TEXAS MONT. WYO. COLO. N.M. IDAHO UTAH ARIZ. NEV. CALIF. OREG. WASH.
65° 70° 75° 80° 85° 90° 95° 100° 105° 110° 115° 120° 125° 130°
25° 30° 35° 40° 45°

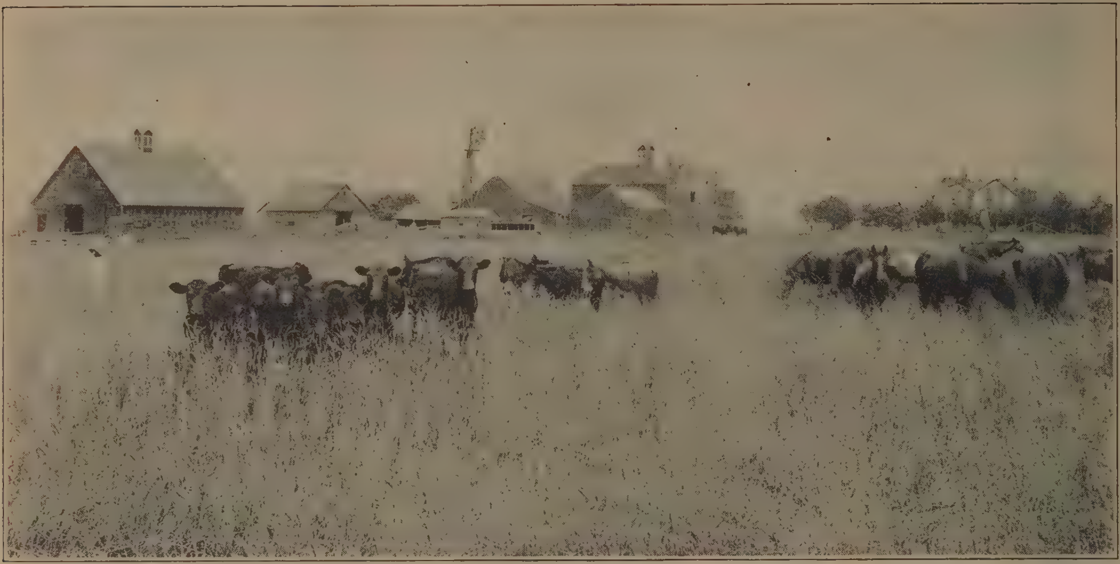


Figure 385. A live-stock farm in Nebraska. The owner of this farm raises cattle, horses, and mules, and much of his land is improved pasture such as you see in the picture. What reasons can you give for the fact that he has large barns on his farm? What do you see in the picture that shows how he obtains water?

IV. THE USE OF THE GRAZING LANDS

Foreword. There are three principal uses for the lands of a country. Some are best suited to forest growth, others make excellent pastures, and some, as you have seen, are suitable for crops.

As the population in a country increases and more and more food crops are required, forests and pastures are often forced to give way to the plow, and pastures tend to be restricted more and more to hilly, stony, or semiarid lands. In many of the larger countries of the world there are considerable areas that can be best used as grazing lands. Most lands in the temperate zone where less than 15 inches of rain falls each year and where there are grasses or scrubby types of vegetation are used as permanent pasture land.

In Japan and some of the other Oriental countries the people do not raise many cattle or sheep, largely because they cannot afford to use their lands for pastures or for producing hay and grain for live stock. They need nearly all the land they have to raise grains and vegetables for the people to eat. This means that many of the poor people have to get along with very little meat and that even the well-to-do people eat much less meat than the people in stock-raising countries do. When the people of a country produce but few live stock, they lack not only meat but skins and hides for leather, wool for clothing, and animal fats. The few people who live in far northern lands can often obtain these products from the wild animals.

As you read this chapter try to discover

1. Why certain parts of the United States are used chiefly for grazing.

2. Why there is more grazing land in our Western states than in our Eastern states.

3. How railroads helped the ranch business.

4. What part live-stock products play in our foreign trade.

1. DISTRIBUTION OF PASTURES IN THE UNITED STATES

We divide our pasture lands into two classes: (1) the natural pastures, where live stock graze on the native plants, and (2) the improved pastures, which have been planted with grass seed or improved in other ways for purposes of pasturage. Do you know where the chief areas of these two classes of pasture lands are located?

Improved pastures. As the settlers in this country began to carry on farming on the lands along the eastern coast, and gradually to move westward, their habit was to divide their farms in such a way as to have part for crops, part for pasture, and part for a wood lot. Since most of the eastern half of our country was originally forested, each farmer in the early days of settlement could easily leave part of his farm in forest.

The part of the farm that was cleared and used as pasture was sometimes seeded so as to produce better grass, and the pasture land was sometimes used, in rotation, for growing crops. In this way the settlers in the eastern and central farm lands of the United States were able to improve their pastures.

We now have in the humid, or well-watered, eastern half of our country about 60 million acres of improved pasture land and, in addition, a much larger acreage of unimproved pasture land. Many of the farmers use their improved pastures for dairy cows, for the development of large city markets has made dairy farming a very profitable business. This is especially true in New England and New York State, and in Michigan, Wisconsin, southeastern Minnesota, and northern Illinois. Many other farmers use their improved pasture lands for beef cattle. The largest number and greatest acreage of pastures devoted to this use are in the Ohio Valley and in the western part of the corn belt, — in Iowa, Missouri, Kansas, and Nebraska. *See Figure 385.*

In the northeastern quarter of the United States the farmers find it necessary to keep their stock under shelter during the winter months and to feed them with forage crops that they have raised in the summer season. They have built great barns in which to store hay, and silos in which to preserve ensilage for winter feed.

Natural pastures. In many parts of the United States there are natural pastures where live stock graze on the native vegetation. The lands which will not support forest growth and are not suitable for farming, but which are useful as pastures, are chiefly in the western half of the country. They are in the arid and semiarid plains and plateaus of the West where there is too little rain for farming, or in the mountains where the slopes are too steep and rocky or the growing season too short for producing crops. These drier and rougher pastures of the West are used both for sheep and for cattle.

Some terms to explain. Explain what is meant by (1) land cleared for farming; (2) rotation of crops; (3) natural pasture land; (4) improved pasture land; (5) semiarid land.

Map study. Turn to page 387 and study the location of the lands in the United States which are used chiefly for grazing. In what part of the country are they located?

Compare the map on page 387 with the one on page 386. What kinds of natural vegetation are found in the areas used chiefly for grazing?

2. PASTURES OF THE GREAT PLAINS

Have you ever read stories of the cowboys and the cattle round-ups in the old days when to the people of the East all the land beyond the Mississippi was known as the "West"? The scenes of these stories are laid in the Great Plains, a region of our country which has had a most interesting history. As you read this section, you will learn why the Great Plains are one of our leading stock-raising regions today.

The short-grass belt. The western part of the Great Plains is the largest short-grass area in the United States. It stretches from southern Texas northward into Canada, and its average yearly rainfall varies from 10 to 20 inches. Streams that rise in the Rocky Mountains cross this belt of semiarid land and furnish water for irrigating some of the lowlands which border them. In the early days of settlement in this region the cattlemen picked out the valley lowlands for their homes, and many of the large cattle ranches are still located there. In the warmer southern section of the Great Plains it is possible for the cattle to graze in the pastures the year round, but in the central and northern sections the ranchmen raise large quantities of wild hay and alfalfa to feed their stock whenever deep snow covers the ground in winter. Healthy beef cattle do not usually need shelter except in times of blizzards, or heavy snowstorms. For this reason the ranchmen do not build large barns. They stack their hay and alfalfa in the fields and feed the cattle from the stacks whenever such feeding is necessary. *See Figure 386.*

Little by little general farming has been moving westward and crowding the ranchmen in the Great Plains. Near the eastern margin of these plains, where the rainfall averages from 15 to 20 inches a year, the farmers often get good crops of wheat; and when good years come, more of them move to the region and some try their luck still farther west. When a series of poor years with exceptionally scanty rainfall comes, however, and there are crop failures, farmers who do not have enough savings set aside cannot pay their expenses. In this marginal zone between the good farming land of the Central Plains and the good grazing land of the Great Plains, the surest crops are those which are best suited to withstand drought. In the southern section the drought-resistant crops known as sorghums (such as Kafir corn and milo maize) are grown, and in the central and northern sections certain drought-resistant varieties of corn are raised.

The old buffalo range. In the short-grass belt of the Great Plains the uplands between the valleys, where irrigation cannot be practiced, are the natural pasture lands for cattle and sheep. This region was the natural pasture, or range, for the great herds of American buffaloes which roamed over the plains in the days before the white people came to live in this part of the country, and which were hunted by the Indians for their meat and their hides. After the coming of the white men the buffaloes were killed off, and today they are found only in certain of the national parks of our country and Canada, where they are protected, and in "zoos."

From buffalo range to cattle range. Early Spanish settlers in the southern part of the Great Plains had brought long-horned cattle with them. These cattle, which were allowed to roam freely in the open grasslands, multiplied very fast, spread northward, and became almost like wild animals. When settlers from farther east pushed westward into the Great Plains, they found, especially in Texas, large numbers of "longhorns" which were nobody's property. All they had to do to make money was to take possession of herds of these cattle, find markets for the meat, and get the meat to market.

Markets for meat already existed in the cities of the eastern and north-central parts of the country, and more and more railroads were being built westward into the Great Plains. The cattle could walk to the railroads, grazing and becoming fat on the way. Thus conditions were favorable for cattle-raising on the Great Plains, and the old buffalo range soon became a cattle range.

The long-horned cattle did not furnish meat that was tender enough to satisfy the demands of the market, and little by little the

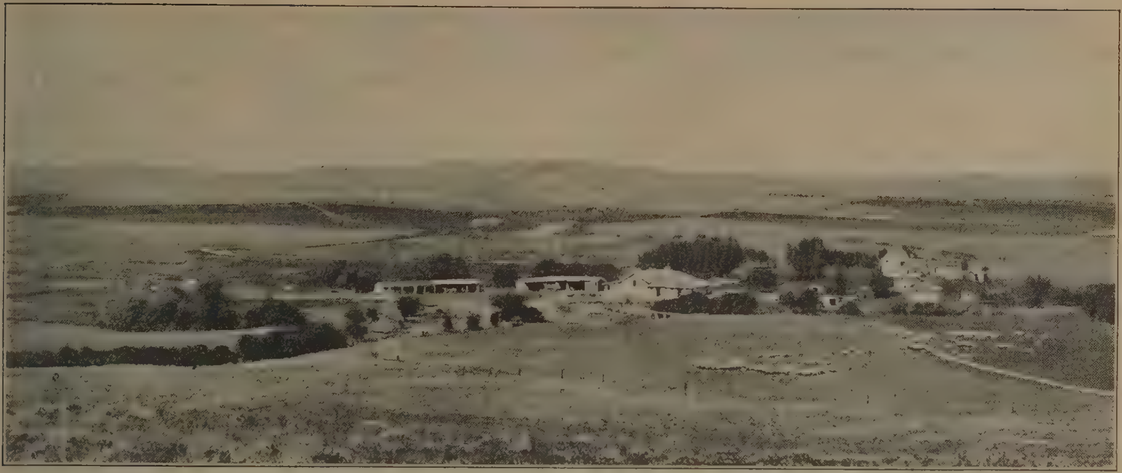


Figure 386. A ranch in the Great Plains of Wyoming. The owner of this ranch raises sheep as well as cattle, and uses part of his land for growing wheat by dry-farming methods. What crops do you think he probably raises for the winter feeding of his live stock? Why is it unnecessary for him to build large barns?

ranchmen introduced better grades of stock. The long-horned cattle, like the buffaloes, have now almost disappeared, but many of the cowboy songs tell of the days when the "long-horns roamed the range."

The cowboys. During the early days of settlement the pastures of the Great Plains were unfenced, and they formed one immense stretch of grazing land more than 1000 miles long and from 300 to 500 miles wide. This was called the "open range." During the days of the open range the cattle could wander wherever their owners chose. Each ranchman had to keep a number of expert cowboys who saw to it that all his cattle and calves were marked with his particular brand, or mark. The cowboys rode the range to keep the cattle from wandering too far away and to find any calves that should be branded. In the days when most of the cattle were long-horns the work of the cowboys was exciting and dangerous, for these half-wild animals were difficult to herd together, and ugly when frightened into a stampede, or rush.

Much of the work on the Western range required the strongest and most daring of horsemen. Most of the time the cowboys lived in the saddle. Each one had five or six horses, so as to have a fresh mount every day. The cowboys were forced to live away from the ranch house much of the time, and so they camped out in the open, often with no shelter and only the simplest of food.

The round-up. Each spring all the cowboys in a district worked together and had a general round-up. They rode for days and days, beginning at the outskirts of the range where their cattle commonly grazed, and hunting through every valley and hollow or sheltered place to find the cattle. Before starting out they agreed on a central place for the round-up, and to that place they drove all the cattle.

When all the cattle had been rounded up, those that were to be sold were sorted out and grouped in herds for the different owners. Each man's cattle were known, of course, by the brand. Then the cows, also bearing their owners' marks, were driven into the branding pens, and their calves followed them. Each calf was then branded with the same mark as the mother. Any calves that did not remain with their mothers were divided among the ranchmen in proportion to the number of cows which each man owned. After the branding, all the cattle except those which were to be sold were turned out on to the range again.

Marketing the cattle. After each spring round-up, the cattle that were to be sold were immediately started on their way to market. This often meant driving the cattle hundreds of miles. The "long drives" — that is, the longest ones of all — were those which were made by the cowboys of Texas, because for many years the nearest railroad by which they could ship cattle eastward was in central Kansas. Day after day and week after week these cowboys kept the cattle moving slowly northward, allowing them to graze and fatten on the way. Sometimes they shipped the cattle eastward from Kansas, and sometimes they drove them to railroads still farther north.

The coming of the sheepmen. In time, men who wanted to raise sheep came into the Great Plains. This at once caused trouble; for sheep nibble the grass so close that they almost "eat the range clean," and there is little pasturage left for cattle that may come after them. The sheepmen felt that they had as much right to the open range as the cattlemen had. The cattlemen, on the other hand, felt that since they had been there first, the sheepmen whei c.v had no right to come in and injure their business. Many battles were fought, and "dead lines" were established across which neither sheep nor cattle could pass with safety. One side was reserved for the sheep and the other for the cattle. Conditions finally became so bad for both sheepmen and cattlemen that the only solution was to divide up the open range.

The coming of the railroads. Until the railroads reached the eastern margin of the pasture lands, it was difficult to get the live stock to the large markets in the Central Plains. It was the railroads, therefore, which made possible the development of the ranch business on a large scale.

With the coming of the railroads, more and more farmers moved westward. As was natural, they fenced in the lands which they selected for their farms. Many of the ranchmen bought land from the farmers or purchased large tracts from the railroads which they fenced in for their exclusive use as pasture land. These changes, in time, brought about the end of the days of the open range in the Great Plains.

Today life on the ranches of the Great Plains is very different from what it was in the old days. Most of the pastures have been fenced, and there are but few of the old type of cowboys left. Railroads now reach nearly all parts of the short-grass belt, making it an easy matter to ship cattle and sheep eastward to the corn-belt farms for fattening or to the meat-packing centers for slaughtering.

Map studies. Use the map on page 376 to work out these map studies:

1. Trace the brown line which starts in North Dakota and runs southward to central Texas. Notice that it follows the hundredth meridian in a general way. This line is, roughly, the boundary between the Central Plains and the Great Plains. 2. What states lie partly in the Central Plains and partly in the Great Plains? Nebr. N.D S.D OK

3. What crop lands extend farthest west into the Great Plains? 4. What reason can you give for the fact that they extend farther into the Great Plains than the corn belt does?

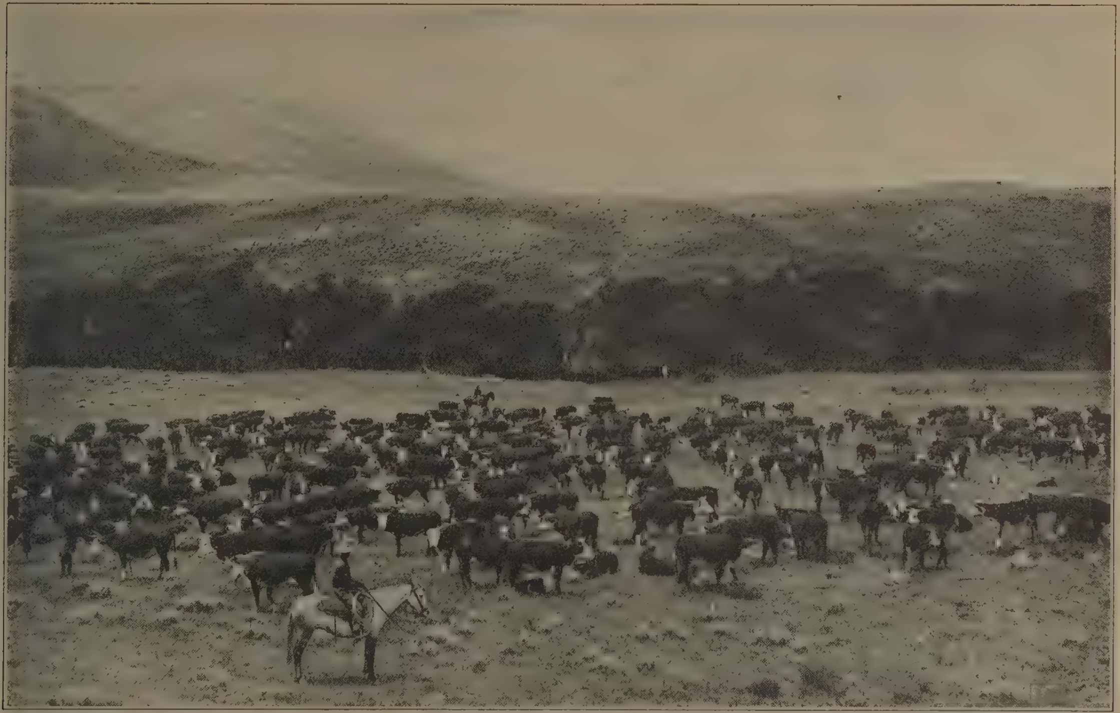
5. Find the parts of the Great Plains which are included in the lands of grazing and irrigated farming. These are the lands where the raising of live stock, especially cattle, is more important than the raising of crops. 6. What states share these pasture lands? Mont Wyo Colo N.M.

Some things to explain. Explain why

1. Ever since the Great Plains were settled they have been used for stock-raising.

2. The cattlemen in the Great Plains objected to the coming of the sheepmen.

3. Many changes took place in the Great Plains after railroads reached the region.



Photograph by Charles J. Belden

Figure 387. A spring round-up of cattle on a ranch in the Rocky Mountains. The cowboys round up the cattle and brand the calves before taking the stock to the summer pastures in the mountains. Some of the ranchmen own pasture lands in the mountains, while others pasture their live stock in the national forests.

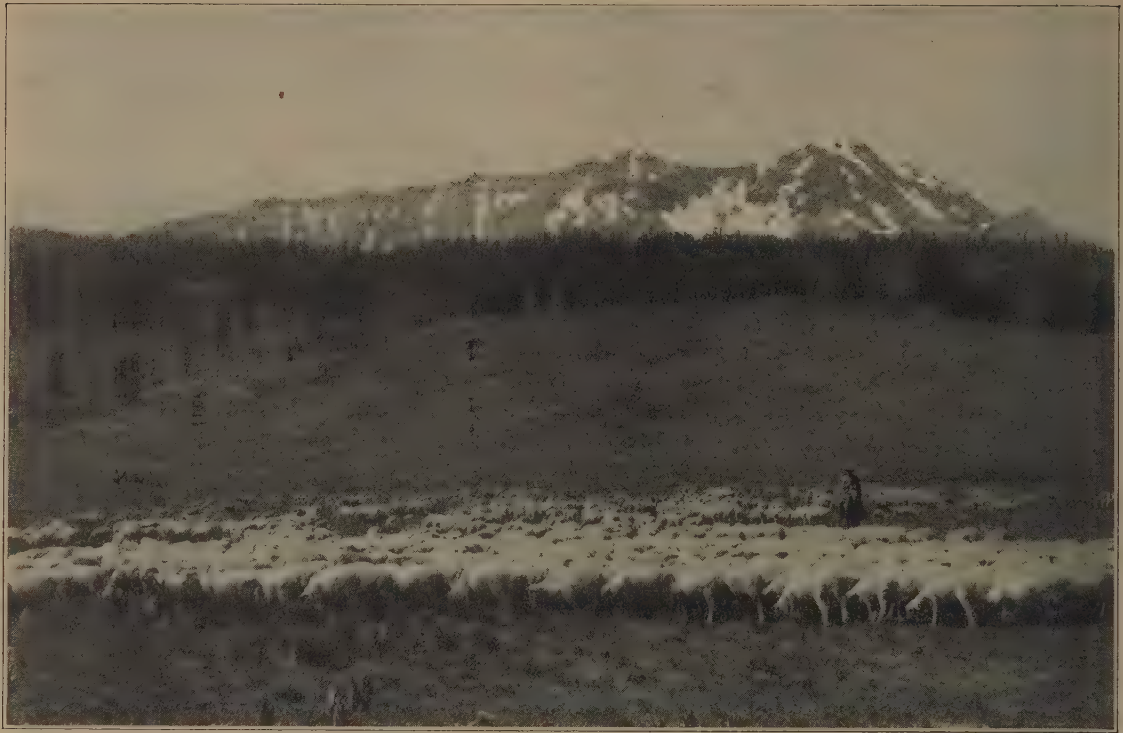
3. PASTURES WEST OF THE GREAT PLAINS

On the west the Rocky Mountains rise steeply from the Great Plains, and beyond the Rockies are the western plateaus. The map on page 376 shows that there are three main divisions of the western plateaus: the Columbia Plateau, the Great Basin, and the Colorado Plateau. What kind of extensive farming is carried on in parts of the Columbia Plateau?

Except for the Columbia Plateau wheat lands, the Rocky Mountains and the western plateaus are regions of grazing and irrigated farming. What did you learn on page 389 about the pasture lands in these rougher and drier parts of the West?

The westward expansion of ranching. With the ever increasing population and the closing of much of the open range of the Great Plains, some of the ranchmen moved westward into the Rocky Mountains. There they found lowlands in the valleys where they could build houses and raise alfalfa or some other hay crop. During the summer their cattle grazed in the open forests on the mountain slopes, and their sheep sometimes went still higher into the beautiful green meadows above the timber line.

Grazing in the national forests. For many years these ranchmen had the free use of much of the mountain country. Then came the movement to establish national forests, and large areas were set aside by Congress as forest reservations. Grazing privileges in the national forests are now assigned to the ranchmen by the forest officers. Each ranchman who so desires may apply for a district which he can use for his stock. Whether or not he is able to get it depends on how many applicants are ahead of him and on certain other condi-



U. S. Forest Service

Figure 388. A flock of sheep grazing in one of the national forests in Colorado. The flocks of sheep are tended by herders. With the help of dogs trained for the work, the herders drive the sheep from place to place in the districts assigned to the owners and keep them from wandering away and becoming lost.

tions. There are advantages for him in this plan; for if a district is assigned to him, no one else can turn live stock into it. He must, however, pay a small fee to the Forest Service of our government for each head of stock that he puts into these government pastures. The fees vary somewhat, but it is common to pay about twelve cents for the summer board bill for one sheep, seventy-two cents for a cow or steer, and ninety cents for a horse. *See Figures 387 and 388.*

Several millions of sheep and hundreds of thousands of cattle are turned into the forest reservations each year to graze during the warmer months. Their annual board bill to the government averages about $1,800,000.

Semiarid pasture lands of the Western plateaus. In the plateaus west of the Rocky Mountains there are large areas of arid grazing lands some of which can be used for cattle, but many of which are better suited to sheep. A comparison of Figures 392 and 393 will show you that there are many more sheep than cattle in these drier pasture lands.

The ranchmen of the Columbia Plateau and the Great Basin raise large quantities of alfalfa and other forage crops on irrigated land for winter feed for their live stock, or they buy such feed from farmers who make a special business of raising it. Like the ranchmen of the Great Plains, they send many of their sheep and cattle to the national forests in the bordering mountains to graze during the summer. Some of the live stock go to the Rocky Mountains on the east, and some to the high mountain ranges on the west.

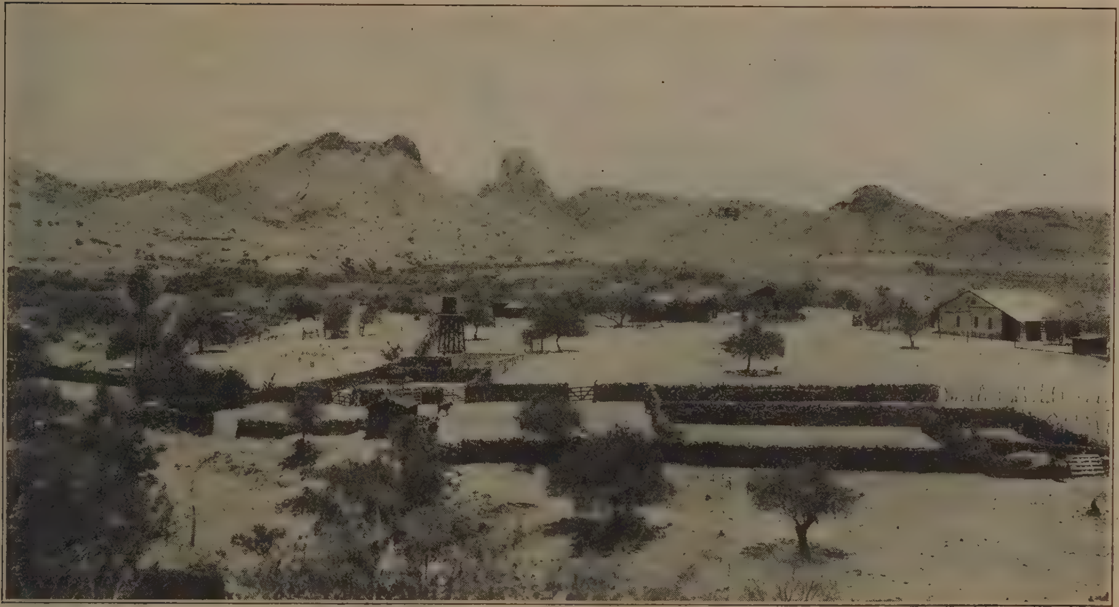


Figure 389. A ranch in the semiarid grazing lands of Arizona. When the cattle are brought in from the pastures, they are kept in the corrals, or fenced inclosures, shown in the picture. Why is it unnecessary to provide shelter for them? How do the ranchmen obtain water for their stock in this dry southwestern region?

Farther south, in the Colorado Plateau, it is not necessary to raise so much winter feed, for the stock can graze out of doors most of the year. Various Indian tribes and many white people raise cattle and sheep in these pasture lands of the Southwest. *See Figure 389.*

Among the Indian tribes of this region are the Navajos, who have long been shepherds. They spin and dye the sheep's wool and weave the yarn into blankets. The better grades of genuine Navajo blankets are works of art. They are made by hand, and the weavers work the patterns from memory or make original designs with nothing but their artistic sense to guide them.

Sentences to complete. 1. In the early days the grazing lands of the Great Plains were known as the open range because ----------.

2. Today there is very little of the open range left in the Great Plains because ------------.

3. Far more sheep than cattle are raised in the Western plateaus because ------------.

4. Except in the southern sections of the Western pasture lands the ranchmen raise large quantities of alfalfa and other forage crops because ----------------------------------.

5. The farmers in the corn belt who buy cattle and sheep from the ranchmen farther west raise large quantities of corn because ------------------------------------.

6. The national forests in the Western mountains are useful to the ranchmen because ----- -------------------------------------.

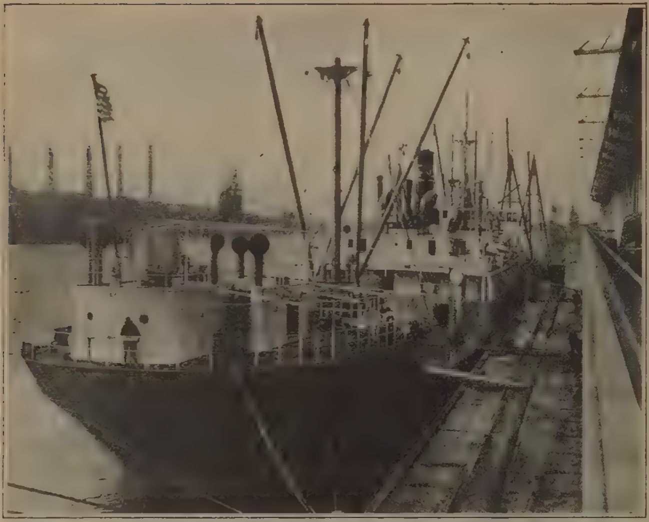
7. There are much larger areas of unimproved pasture land in the western part of our country than in the eastern part because -----------.

8. Many of the natural pastures of the West will never be used for farming because --------.

9. Irrigated farming is a help to the ranchmen of the Western plateaus because ---------.

Special credit work. 1. Find a book which tells about the life of the cowboys in the days of the open range. Write an essay about their life to read to your class.

2. Find out what you can about "Buffalo Bill" and tell your class about him.



Courtesy of Boston Tidewater Terminal

Figure 390. A ship unloading Australian wool at a freight terminal in Boston. Boston and Philadelphia are the leading ports through which wool from distant lands enters our country.

Hides and skins. Since we raise large numbers of live stock, we produce large quantities of hides and skins. Even so, we have to import additional supplies of hides and skins to satisfy the demands of our manufacturers. Argentina sends us most of our imports of cattle hides; India, China, and Brazil most of our imports of goat skins; and New Zealand, Australia, and Argentina most of our imports of sheep and lamb skins.

The hides and skins produced at home and imported from foreign countries go to our tanneries to be made into leather. Of the total amount of hides and skins used, about four fifths are used to make shoe leather, and about one tenth to make glove leather. The rest is used for miscellaneous purposes such as the making of belting, harness, upholstery, and fancy leathers.

Although we do not export many hides and skins, we do export large quantities of leather. Our leather goes to nearly a hundred different countries, but Great Britain is the most important market for it.

Wool. Australia is the largest producer of wool, Argentina is second, the United States is third, South Africa is fourth, and New Zealand is fifth. Our production of wool is large, but our manufacturers need so much wool that we import almost as much as we produce. Our imports of wool for making carpets and rugs come chiefly from China, India, western Asia, and Argentina; those for other manufacturing purposes come chiefly from Australia, New Zealand, Argentina, and Uruguay; and smaller quantities come from most of the other wool-producing countries of the world. *See Figure 390.*

Meat and meat products. The building of the railroads, the growth of farming in the Central Plains, and the growth of ranching in

4. Products of our Grazing Lands

The amount of pasturage required to feed farm and ranch animals differs very much. A pasture where one horse, cow, or full-grown steer can get a living will support from three to five hogs or from four to seven sheep. In the better, well-watered pasture lands a farmer needs from one to five acres for one horse, cow, or full-grown steer. In the short-grass belt of the Great Plains a ranchman must have from fifteen to twenty-five acres for one such animal, and in some of the poor pastures in the semiarid parts of the country from fifty to seventy-five acres, or even more.

Of the 1,903,000,000 acres of land in the United States, about 468,000,000 acres, or nearly one fourth, are so dry that they can be used only for grazing. They are located where the climate is too dry for raising crops and where irrigation is impossible. A large part of our country, as far as we can see into the future, will always be used as pasture land, and that means we shall always produce much of the wool, hides, skins, and meat that are needed in this country. Do you know what part livestock products play in our trade with other countries of the world?

the West made possible the development, on a large scale, of the meat-packing business. Cincinnati first took the lead in this business, and later Chicago. Now there are large packing houses also in East St. Louis, Kansas City, Omaha, Denver, and other large cities in the interior of the country. The chilling or freezing of meat and the shipping of the meat in refrigerator cars have also been very helpful in the development of the meat-packing business. *See Figure 391.*

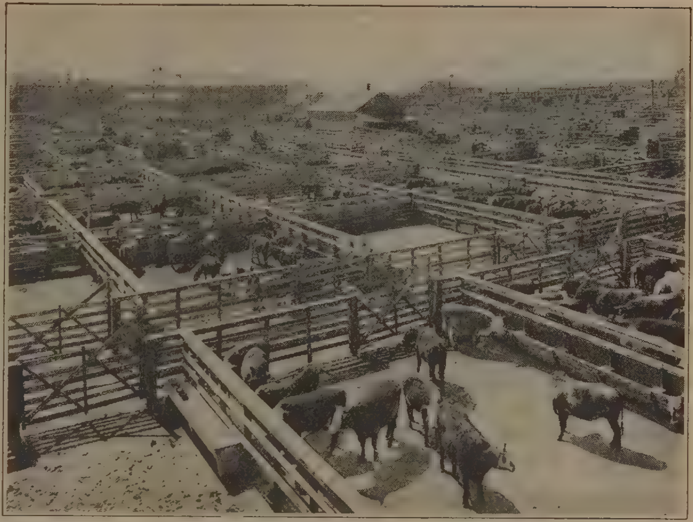


Figure 391. Part of the stockyards at Omaha, Nebraska. Cattle, hogs, and sheep are brought to the meat-packing plants by trainloads, and are kept in pens in the stockyards until they are killed.

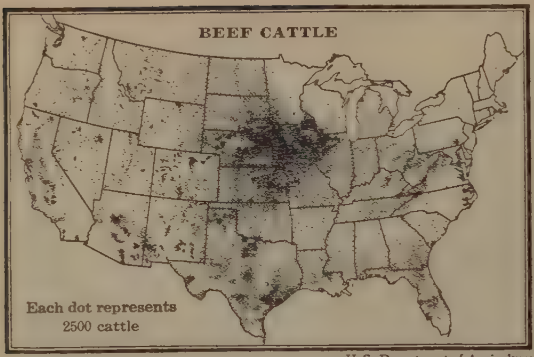
The packing houses of our country export large quantities of meat and meat products — mostly pork and lard. The countries of western Europe are our best customers for these products, and Great Britain has always purchased more than any other one country.

Great Britain and Germany are the largest consumers of American lard, but Cuba, Mexico, and the Netherlands also purchase large quantities of lard from us.

The export of meat was steadily increasing until the early part of the present century. Since 1900 there has been a decline in our exports of beef except during the World War and for a few years after the war. Exports of pork increased until 1925, when they too began to decline.

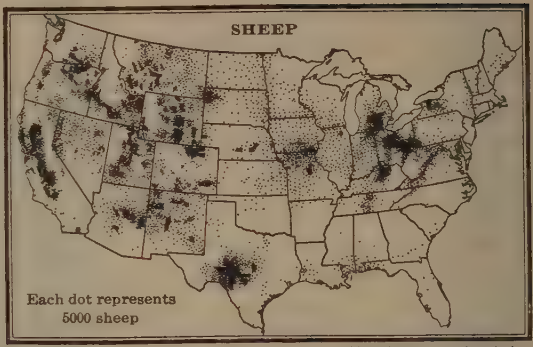
At present pork makes up the bulk of our meat exports, and Great Britain is always the largest buyer. Formerly our exports of beef were greater than those of pork; but as the cost of producing cattle has advanced, the price of beef has increased, and therefore little beef now goes to foreign countries. As the price of beef increases, the amount which each person eats tends, on the average, to decrease. In the last thirty years the consumption of beef and veal in the United States has decreased from about seventy pounds a year per person to about fifty pounds.

While we were a younger country with plenty of land and a smaller population, we could produce much more meat than we needed. But by 1914, when the World War began, population had increased so fast and so many people had gone to live in the cities and to work in the manufacturing industries that we did not have so large a surplus of meat for export. Now, however, the use of the tractor and the automobile has reduced the number of horses and mules in this country by fully seven million, and millions of acres of land formerly needed for pasture and forage for those animals might now be used for meat animals. But in the last few years farm production has increased rapidly in Europe, and the markets for our meat and meat products are not so great there as they were before the war. It is not, then, because we cannot increase our production of meat and meat products that our exports are not greater, but because we cannot find profitable markets to make such increase worth while.



U. S. Department of Agriculture

Figure 392. A map showing the distribution of beef cattle in the United States. Notice the large numbers of beef cattle in the western part of the corn belt. What reasons can you give for this?



U. S. Department of Agriculture

Figure 393. A map showing the distribution of sheep in the United States. Notice that there are many more sheep than cattle in the regions west of the Great Plains. How do you explain this fact?

Questions for class discussion. 1. Why should some of the land in our country be reserved permanently for pastures? 2. Why are there more grazing lands in the western than in the eastern half of our country? 3. How did the railroads help the development of the ranch business in the West? 4. How did the invention of refrigerator cars help the ranch business? 5. Why in the last thirty years have we, as a nation, reduced the amount of beef that we eat per person?

Some live-stock problems. 1. Suppose that you are a ranchman and that you have bought 3750 acres of land in a section of the Great Plains where 15 acres are needed to support one full-grown steer. About how many cattle can you have on your ranch?

2. How much pasture land would the same number of cattle require in a part of the Western plateaus where 50 acres are required for a full-grown steer?

3. Suppose you decide to raise sheep instead of cattle on your ranch. About how many sheep will your pasture land support?

Some things to explain. 1. The leading wool-exporting countries are Australia, Argentina, the Union of South Africa, New Zealand, and Uruguay. In what ways are these countries well suited to sheep-raising on a large scale? Why do they export the greater part of the wool which they produce?

2. The leading wool-importing countries are France, Great Britain, Germany, and the United States. What reasons can you suggest for the large consumption of wool in these countries?

3. What statement can you make with reference to the direction of movement of raw wool in the trade of the world?

4. The leading meat-exporting countries are Argentina, the United States, Denmark, the Netherlands, Uruguay, New Zealand, and Australia. What reasons can you give for the fact that Denmark and the Netherlands rank high among the exporters of meat? Why do Argentina, Uruguay, New Zealand, and Australia have a large surplus of meat for export?

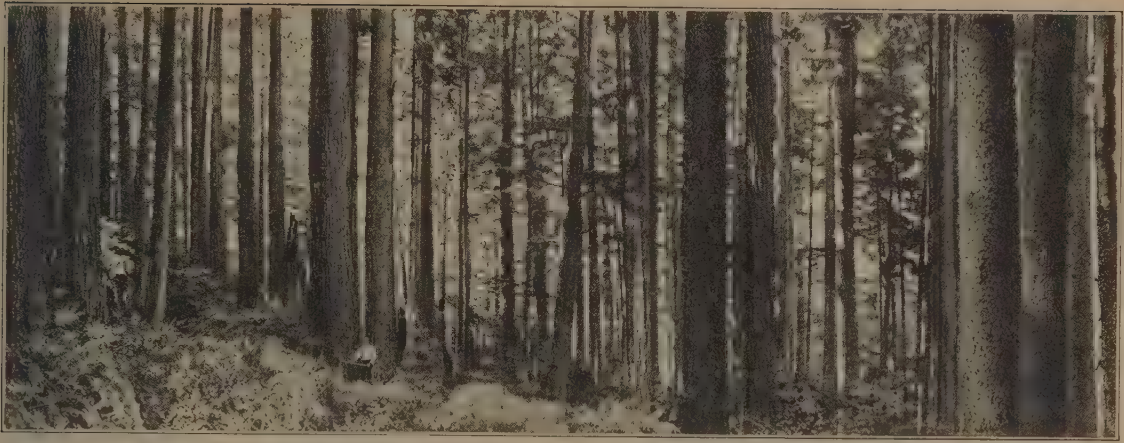
5. The leading meat-importing countries are Great Britain, Germany, France, Italy, and Belgium. Why do these countries require large quantities of meat from other lands?

6. What statement can you make with reference to the direction of movement of meat in world trade?

7. How is it possible for fresh meat to be shipped to western Europe from far distant countries?

Buying live-stock products. 1. Suppose you are a buyer for a leather company and you need supplies of cattle hides, goat skins, and sheep and lamb skins from distant lands. Use a map of the world to show where you might send for them.

2. Suppose you are a manufacturer of woolen goods and you need wool from distant lands. Point out on a world map the countries from which you might get it.



Courtesy of Pacific Spruce Corporation

Figure 394. A view in a forest of Douglas fir, Sitka spruce, and Western hemlock in Oregon. Hardly more than a fourth of the tree beside which the lumberman is standing shows in the picture. Tall, straight, softwood trees like these, with but few low branches, provide the best of our timber for building purposes.

V. OUR FOREST RESOURCES

Foreword. Let us imagine that we are crossing the United States in an airplane from the Atlantic coast to the Pacific, following the parallel of 40° north latitude. As you read about this trip, trace the route on the map on page 387.

In the eastern half of the country we shall look down on a great farming area with patches of forests here and there, and many wood lots. West of this we shall see a grassland with few trees except along the streams, and beyond the grassland the Rocky Mountain region with dark, green forests on the lower slopes.

After crossing the Rockies we shall look down on a region where only sagebrush and a few other kinds of drought-resisting plants grow. Finally, we shall reach the high mountains of the Far West, and there we shall again see mountain slopes clothed with dark, green forests.

Suppose, for the moment, that you could have taken such a trip in the year 1492. Study the map on page 386, and tell how the conditions of natural vegetation differed at that time from the conditions today.

The maps on pages 386 and 387 show clearly that much of the original, or virgin, forest of our country has disappeared since the coming of the white men. In the plains of the well-watered eastern half of the country farm lands have largely replaced the forests.

As you study this chapter, keep in mind the following questions:

1. What kinds of forests do we have in our country?
2. What causes have led to the great reduction in the acreage of our virgin forests?
3. What are the principal uses of our forests?
4. Why should our remaining forests be saved from destruction?

1. KINDS OF TREES

There are more than five hundred different kinds of trees in the United States, but they may be conveniently divided into two groups, — the softwoods and the hardwoods. Are you familiar enough with trees to know the difference between hardwoods and softwoods? Do you know where the best forests of each of these groups of trees are found in the United States?

The softwood trees. The trees that are most common in the Western forests, and in the northern and southern parts of the Eastern forests, are what we call the *conifers*. They are so called because they bear cones. Their leaves are narrow, many of the varieties having slender needles for leaves. With the exception of one species, the larch, the conifers are evergreens, — that is, they do not drop their leaves in the winter, and so the trees remain green the year round. Among these evergreens are the pines, spruces, firs, hemlocks, and cedars. On Figure 395 notice carefully the distribution of the forests of softwood, or evergreen, trees.

The wood obtained from the conifer group is "soft wood." Because it is soft compared with other wood, and at the same time strong, it is excellent for construction work and is the kind of wood most commonly used in the building of houses. The softwood trees are also the ones which supply pulp wood.

Sequoias and redwoods. The "big trees" of California are in the group of evergreens. There are two kinds: the great sequoias that grow on the western slope of the Sierra Nevada, and the redwoods which grow on the Coast Ranges north of San Francisco. The sequoia trees are so large and beautiful that some of them have received individual names. The General Sherman tree, in Sequoia National Park, is the largest of the sequoias and is believed to be about 6000 years old. It is 273 feet high, and its greatest diameter at the base is 37 feet. The Roosevelt tree is considered to be the most beautiful of the sequoias, but there are hundreds of others that are nearly as beautiful and nearly as large as those that have received special names.

The redwoods also are very large trees. They grow from 200 to 300 feet high, and they vary from 10 to 20 feet in diameter at the ground. Some of these trees are known to be 1400 years old. The wood is red in color, and is especially valuable for shingles and for buildings of light construction. *See picture on page 342.*

Other large conifers. The most common of the large trees in the forests of the Northwest are the Douglas firs, many of which reach heights of 200 feet and have diameters of 12 feet. They furnish about one fourth of all the lumber now produced in this country. The tall, straight spruces and hemlocks of the Northwest are also valuable trees. Some of them are 200 feet in height and 6 feet in diameter. *See Figure 394.*

The northeastern evergreen forest has today considerable areas of young white pines. They are handsome trees that often grow to be 50 to 75 feet high, and occasionally reach 180 feet in height. Their trunks vary from 2 to 5 feet in diameter. This species formerly furnished the largest amount of finished lumber used for building purposes in the northern states.

The full-grown white pine trees have been largely cut down, and most of those which are left are protected by the national or state governments or are on private estates where they are kept for their beauty. The white pine grows rapidly, and in thirty years, under good conditions, will produce a tree 60 feet high and 2 feet in diameter at the ground. Thousands of the seedlings are being raised in forest nurseries and planted in the northeastern part of our country, where the original forests have been largely cut away.

The most valuable trees in the forests of the South are the yellow pines, which now furnish larger quantities of lumber than any other single species of tree in the country. They are beautiful trees that grow to be about the same size as the white pines. Their bark is noticeably yellow.

The hardwood trees. These trees have broad leaves as compared with the evergreens, and their wood is much harder. This group includes such trees as the oak, maple, birch,

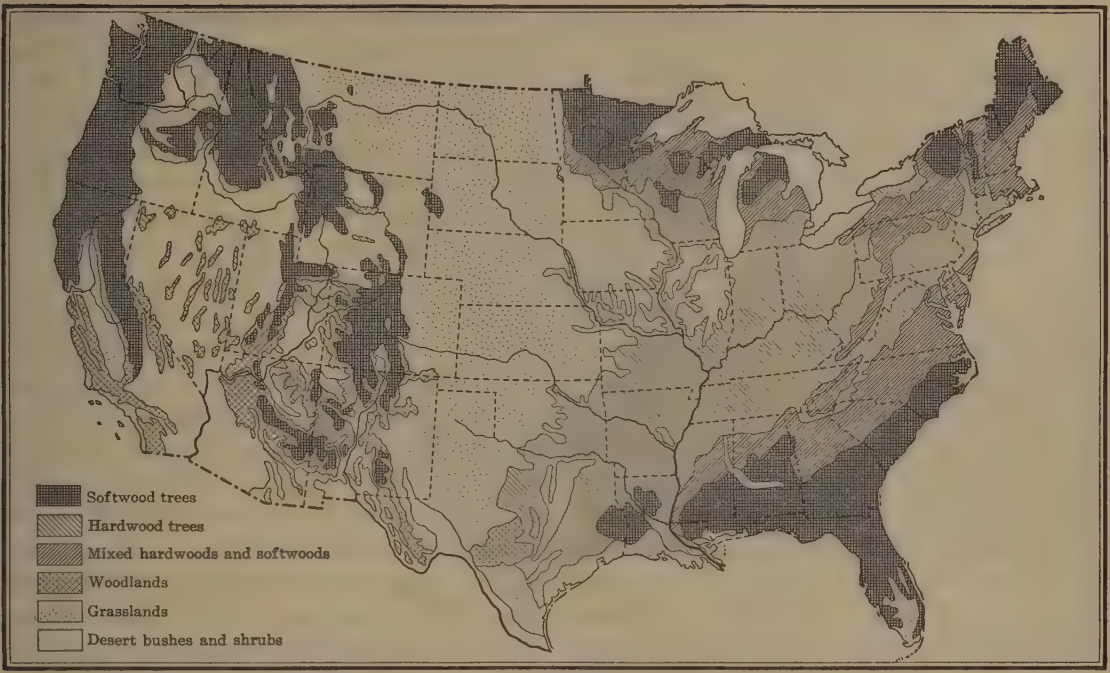


Figure 395. Distribution of forests in the United States.

chestnut, hickory, elm, walnut, and ash. Figure 395 shows that the hardwood trees are most common in the central and northeastern forests of the United States. Almost all varieties of broad-leaved trees that live in the temperate zone shed their leaves each autumn, and their branches remain bare during the winter season. The live oak of our Southern States is the notable exception. Each fall, as the weather becomes cool and frosts occur, the leaves of the broad-leaved trees change color, and we have the beautiful autumn foliage.

The wood of the hardwood trees is useful in many different ways. It is used in large quantities for furniture, for floors, doors, window frames, and paneling in houses, for the wooden parts of agricultural tools and implements, and for many other purposes.

Map study. Find your own state on Figure 395. If it is forested, tell what kind, or kinds, of forests it has, and make a statement describing their distribution.

Some things to explain. 1. Explain what is meant by (1) conifers; (2) evergreen trees; (3) softwood trees; (4) hardwood trees.

2. Explain why many of the softwoods make excellent building material.

Committee work. 1. Make a collection of leaves from the different kinds of trees which grow in the vicinity of your home. Label and mount them in the form of an exhibit.

2. Secure samples of different kinds of wood used by carpenters and furniture-makers. Label them and arrange them in the form of an exhibit. Prepare a list of the principal uses of each sample of wood for exhibition with it.

3. Collect pictures of as many different kinds of trees as you can, including trees which grow in other countries than our own. Mount and label them for exhibition.

Special credit work. 1. Find out how the age of a tree can be determined, and explain the method to your classmates.

2. Find out where the lumber used in your home community comes from, and report on this subject to your class.

2. The Growth of Trees

The seeds of trees are probably distributed to nearly all parts of the world. Why, then, do trees grow only in certain regions? What does a tree need in order to grow? Are there any places in the United States where trees cannot live? As you study this section, try to find answers to these questions.

The need of water. Forests must have ample rainfall. There are no trees in the deserts or semideserts because in such regions the rainfall is not sufficient for their growth. The grasslands also are too dry for trees except in the places where they are crossed by permanent streams. Ten inches a year of rainfall on a good soil will produce grass in all but the coldest parts of the earth; but it takes at least 20 inches a year to provide sufficient moisture for trees, and most trees do not prosper where the annual rainfall is much less than 40 inches.

The need of soil and sunshine. In order to have sound, healthy growth, the seedlings of trees should be planted in deep soil. Where soil is but a few inches or even a foot or two in depth, the roots of a tree find difficulty in growing firmly enough to give the tree support against strong winds. In thin soil, therefore, trees rarely grow to their full height. Sometimes we see large trees growing with their roots in the cracks of rocks where it seems almost impossible for them to have either soil or water. We may be sure, however, that there was a little soil in which the seed started to grow and that moisture in some way reaches the roots. Such examples illustrate the struggle for existence that the trees make.

When a young tree is but a few inches above the ground, its leaves form; and with the light and warmth of the sunshine they help in the growth of the tree. Remember that a tree lives in large part through the nourishment which it gets through its leaves.

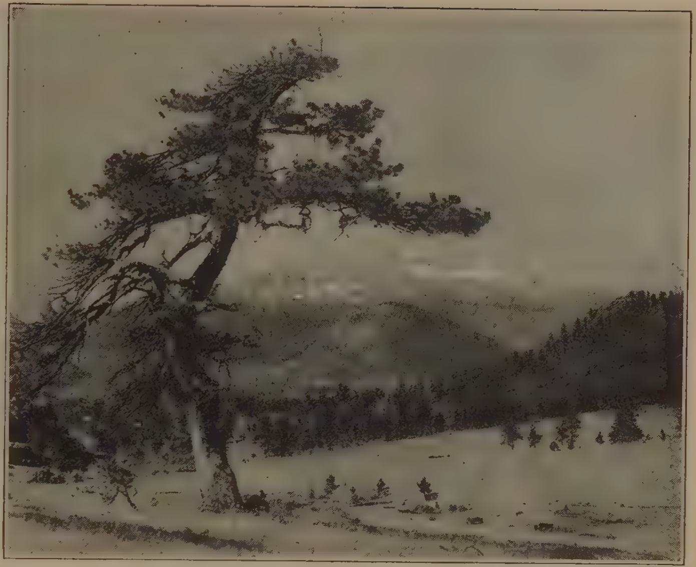
The effect of long-continued cold. As we go northward through Canada, Europe, or Asia, toward the arctic coast, the trees become smaller and smaller until they are like bushes. Because of the short growing season some of the most northerly trees are so stunted in their growth that one must stoop over to reach the topmost branches of a full-grown tree.

Cold lands where no trees grow. When, in traveling northward, we pass the last of the trees in North America, Europe, or Asia, we come to the tundra regions, which are too cold for the growth of anything but grasses, mosses, and hardy shrubs. These plants have their roots in the upper 12 to 18 inches of soil which thaws out in summer. Below a depth of about 18 inches the ground in the tundra regions of the world is frozen all the time. Snow lies on the ground nine or ten months of the year, making the growing season for plants a very short one. What territory of the United States is far enough north to have considerable areas of tundra?

High places where no trees grow. It is not necessary to make a trip to the Far North to see the effect of long-continued cold on tree growth. We have only to climb a high mountain in a well-watered part of our country. First we pass through the thick forests which cover the lower slopes. Then, as we climb higher and higher into the cooler atmosphere, we find the trees becoming smaller and smaller and more and more widely spaced. At last we pass beyond the *tree line*, or upper limit of tree growth, to slopes so high and cold that only grass and small bushes can grow there.

Even on lower mountain slopes, trees cannot grow if the rock surface is bare or if the rocks are constantly sliding down the slopes. Trees must have firm footing, for it takes several years for them to get well started. Most tree seedlings that we find in the forests with their tops a few inches above the ground are two or three years old.

Trees do not flourish in exposed, windy places on the high mountains either, although they sometimes try to grow there. In such places it is not unusual for a tree to spread out over several square yards of the surface of the mountain slope without rising high into the air. All the branches turn upward to the sunlight, but no one of them can rise much above the rest because the winds bend it over and keep it down. Such trees show, from the way in which they bend over, the direction of the prevailing winds. Their crooked branches show the hard time they have in such exposed locations. *See Figure 396.*



Courtesy of Denver Tourist Bureau

Figure 396. A view in the Rocky Mountains of Colorado, showing Longs Peak in the distance. The pine tree shows clearly the effect of its location on an exposed, wind-swept hillside. How can you tell the direction from which the prevailing winds blow?

The trees' struggle for existence. From what we have already learned, it is clear that trees have a difficult time in certain locations. They send out their roots just as far as they can to get moisture and food. Where the soil is very rocky, the roots work their way in and out among the rocks. Where it is very dry and poor in quality, they must go deep or spread widely to get the moisture and the elements of plant food which they need.

The leaves must search for sunshine, and so they spread their surfaces out to receive as much sunlight and warmth as possible. There is a constant effort among trees in a dense forest to send branches higher and higher into the air. Each one seems determined to get above the rest.

Sometimes vines grow on trees and so completely cover their topmost branches that the trees are killed. Lightning destroys many trees, and diseases and insect pests injure or kill them by thousands. Forest fires, many of which are due to carelessness, also destroy thousands of valuable trees every year.

Map study. Make a careful study of Figure 361 on page 366 and Figure 395 on page 401, comparing the distribution of rainfall in the United States with the distribution of forests. Note carefully the amount of rainfall in the forested areas, in the grasslands, and in the areas where only desert bushes and shrubs grow.

Sentences to complete. 1. Valuable forests grow only in regions where the annual rainfall is not much less than -- inches.

2. Trees cannot grow in the tundra regions of the Far North because ----- ---- ------.

3. Trees cannot grow on the upper slopes and tops of high mountains because ------------.

4. Trees cannot grow in the deserts and semi-deserts because ------------------------.

5. Trees are scarce but grass is plentiful in the Great Plains of the United States because

------------------------------------.

Special credit work. 1. Find out the various ways in which the seeds of trees are distributed over the earth, and report to your class.

2. Find out how leaves help plants and trees to grow, and describe the process to your class.

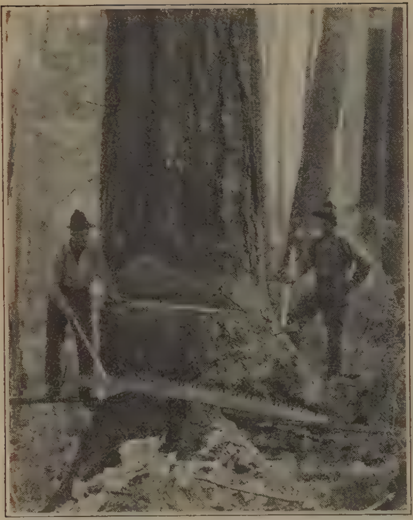


Figure 397. Lumbermen cutting down a giant Douglas fir tree in Washington. Notice the tools they are using.

Figure 398. A log train in Washington. The train is made up of eight flat cars, each of which is loaded with three large logs forty feet in length. The loading machine can be seen at the right.

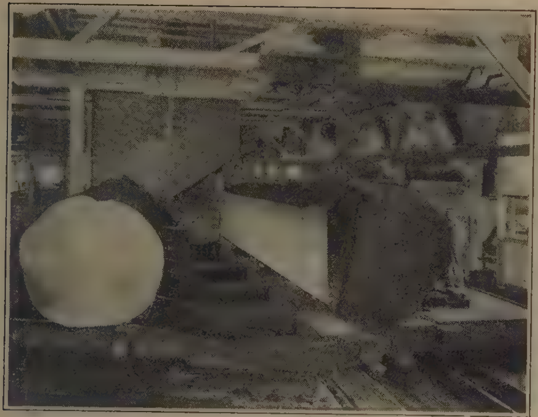
3. THE USES MADE OF OUR FOREST TREES

We have been a most extravagant people in the use of wood. It is estimated that on the average we now use, per person, ten times as much wood as the people of France and about twenty times as much as the people of Great Britain. In this section you will learn of our past and present uses of wood, and how, in certain ways, we have wasted our forest resources.

Early uses of trees. In the days when the eastern half of our country was being settled, the trees in the forests supplied practically all the fuel and most of the building material used by the people. Much wood was also used for making furniture and wagons and for building ships and boats. The forests were so extensive, however, that they were often considered a nuisance, for it took a great deal of hard work to clear the fields for cultivation. Wood was so abundant that often there was no market for timber felled in order to clear the land, and as a result, great piles of logs were burned simply to get rid of them.

Among the industries undertaken in the early days by the colonists, several depended in part on the forests. When the manufacture of iron was begun, wood was used to make charcoal for smelting the iron ore. The tanning of hides and skins required tanning extract, which for many years was made chiefly from hemlock bark. Wooden shipbuilding required the use of tar and turpentine, which were obtained from certain kinds of pine trees in the South. For a long time these products were called "naval stores" because they were used chiefly in shipbuilding.

Increasing demands for wood. With the rapid increase in our population came increased demands for lumber. Houses, barns, sheds, and fences were needed on each new farm; more and more hardwoods were required in the manufacture of furniture and vehicles; and the construction of wooden ships, bridges, piers, and wharves demanded greater and greater quantities of timber. New industries, as they developed in our country, called for more and more wood for the building of mills and factories. As more and more



Courtesy of Pacific Spruce Corporation

Figure 399. A view in a sawmill. The log at the right is clamped to a moving platform which carries it forward against the steel saw which cuts it into boards. Another log is awaiting its turn at the left.

products became available for export, great warehouses were built at the seaports and in most cases wood was used in their construction.

As cities grew, vast quantities of wooden paving blocks were used in the streets, and miles and miles of wooden sidewalks were laid. As railroad building increased, millions of wooden crossties were needed to support the rails, and large quantities of wood were required for the construction of passenger and freight cars. When the telegraph and telephone systems were developed, thousands of tall wooden poles were needed. One invention after another necessitated the use of more and more wood. *See Figures 397, 398, and 399.*

Steel, concrete, and other materials have now taken the place of wood for many purposes, but with the continued growth in population and the ever-increasing variety of industries, new and additional uses have been found for it. What are the most common uses of wood today in your home region?

Wood pulp and paper manufacture. A modern use for wood which is drawing heavily upon our forest reserves today is the manufacture of paper. As civilization has advanced and more people have learned to read, the printing of newspapers, books, and magazines has created a demand for enormous quantities of paper, and today most of our paper is made from wood pulp. Wood pulp, in turn, is made from pulp-wood logs, chiefly spruce, hemlock, and yellow pine. *See Figure 400.*

In addition to all the wood pulp consumed in making paper for printing purposes, large quantities are used for the manufacture of wrapping paper, bags, sacks, cardboard, paper napkins and towels, and other paper products. Large numbers of packing boxes, also, are now made of paper and cardboard, and the number of paper boxes used by the manufacturers of breakfast cereals alone runs into the millions. With the development of rural free delivery, and especially with the growth of the parcel-post service and the mail-order business, merchants are sending more and more merchandise in paper boxes. Wood pulp, when compressed until it is water-tight, makes good waste-paper baskets, tubs, and pails, and increasing quantities are being used for these purposes.

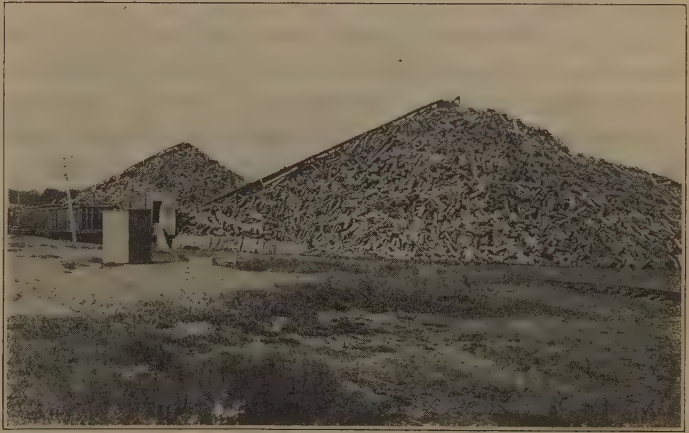


Figure 400. Piles of pulp-wood logs at a pulp mill in New England. Pulp-wood logs are cut in four-foot lengths. Before they are used to make wood pulp they are stripped of their bark.

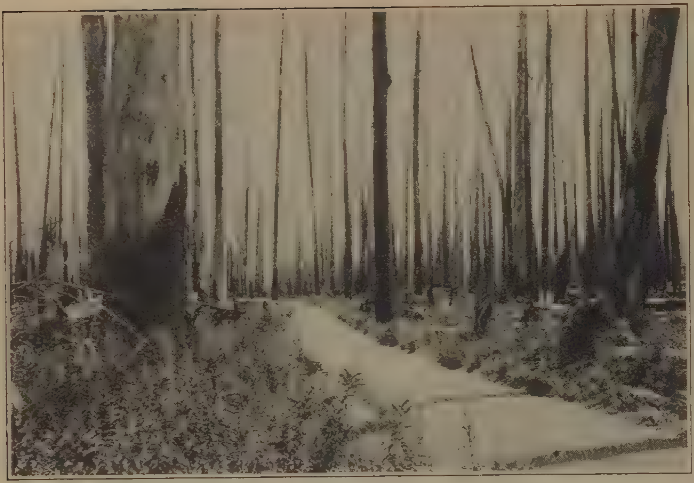


Figure 401. Destruction by forest fire. When fire sweeps through a forest, it leaves behind a waste of charred and blackened tree trunks. All the beauty and usefulness of the forest are gone.

The great development of the paper industry furnishes a way to use many of the smaller softwood trees that do not make good lumber. Second-growth and third-growth timber that has sprung up where the original forests have been cut off or destroyed by forest fires can be used in paper-pulp manufacture. In many places trees are being grown especially for the paper-pulp business.

Most of the pulp mills of our country are in the northern New England States, New York State, and Wisconsin. These states have an abundance of spruce trees and other softwoods which furnish the raw material, and an abundance of clear water, large quantities of which are needed in making wood pulp.

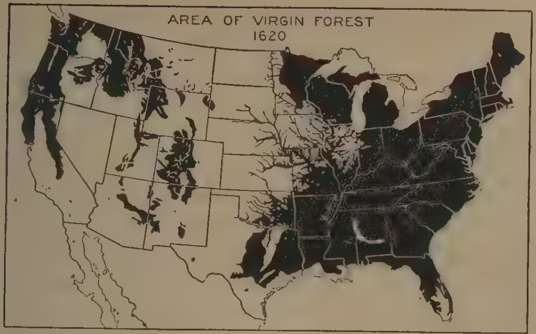
Our consumption of wood. No other people in the world use so much wood as do the people of the United States. We use each year about 12 billion cubic feet of timber for sawed lumber and about 10½ billion cubic feet of timber in other forms, including pulp wood, railroad ties, mine timbers, and fuel wood. The total, 22½ billion cubic feet, is nearly two fifths of all the timber used each year in the entire world.

It is difficult to appreciate this great consumption of timber unless we try to picture it in some way. The pulp wood alone which is consumed in the United States each year would make a wall 4 feet high and 4 feet thick which would extend two fifths of the way around the earth at the equator. All the timber consumed for all purposes each year in this country would make a wall of the same height and thickness twenty-five times as long as the wall of pulp wood.

Our waste of wood. While we have used much of our wood for excellent purposes, we have been guilty of wasting large quantities. Men in sawmills and factories and those who are engaged in building houses are not always careful to use up the small pieces of lumber. Lumbermen cutting trees at the snow level during the winter leave high stumps of valuable wood to rot away. Thousands of "windfalls," or trees blown down, are left unused in our forests, and many undersized trees are cut for lumber. Each tree should grow to its full size before it is cut for lumber.

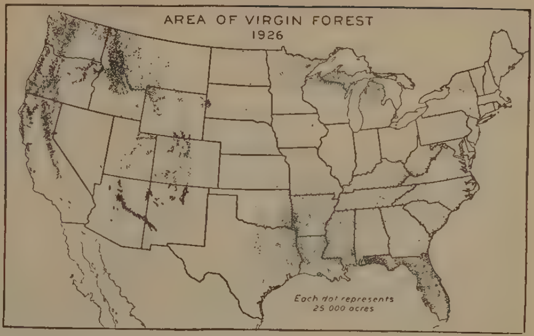
The old-fashioned way of tapping certain pine trees to get the resin, from which turpentine is made, usually kills the trees within five years. If modern methods of "turpentining" are used, the trees live much longer and more resin is secured.

Forest fires have been a chief cause of loss of timber. Some of the fires have been unavoidable, such as those caused by lightning, but many have been carelessly started. It is said that 90 per cent of the fires are caused by carelessness. If that is true, it is a terrible disgrace, for in each of the recent years about 47,000 forest fires have been reported in the United States. *See Figure 401.*



U. S. Forest Service

Figure 402. A map showing the extent of the virgin forests in 1620. About 820 million acres were thickly forested when the Pilgrims landed at Plymouth.



U. S. Forest Service

Figure 403. The present area of our virgin forests — about 138 million acres in all. In what regions has the destruction of forests been greatest? Why?

When, in cutting timber, lumbermen take away only the logs and leave the "slash," or waste material, behind them in the forest, they are heedlessly "building costly bonfires," for tiny sparks may easily set the slash ablaze. A single camp fire left smoldering may mean a disastrous forest fire. Everyone who visits our forests should take care not to cause a forest fire and should volunteer whenever necessary to help to put one out.

The present extent of our timber. The area of virgin timber in the United States is now about 138 million acres, or about one sixth of what it was when the first white people came to settle here. In addition to the remaining virgin timber we have about 114 million acres covered with second-growth trees suitable for lumber, and about 136 million acres of forest having young trees large enough to be cut for fuel or pulp wood. More than half of the timber suitable for lumber that remains to us is in the Northwest. *See Figures 402 and 403.*

The increasing demand for food, which has come with increase in population, is the fundamental explanation of the clearing away of large areas of forests in the eastern half of the United States. This was once a densely forested region. Today it is chiefly a land of farms, with forests in the mountains and in some of the hilly sections.

We must remember that the eastern portion of our country has an annual rainfall sufficient for agriculture. Wherever, therefore, the surface is suitable for farming and the quality of the soil encourages it, the land has been cleared for some kind of agriculture.

The lumbering districts. The forests of New England, New York State, and Pennsylvania were the first centers of the lumbering business. Later, as settlement pushed westward, the forests of Michigan, Wisconsin, and Minnesota became the chief center of lumber production. When the best timber in the Northern forests had been largely used up, the Southern States took the lead in lumber production, and the forests of the Northwest began to be drawn upon. Washington now produces more lumber than any other state, and Oregon ranks second. The states bordering the Gulf of Mexico are also very large producers of lumber, Mississippi and Louisiana ranking third and fourth among all the states.

Southern lumber moves northward. For at least thirty years the Southern pine forests have been the chief source of supply of softwood for the lumber markets of the northeastern section of the United States. But the production of Southern pine reached its peak in 1916, more trees being cut in that year than in any year before or since. From that time on, more and more lumber has been produced in the Northwest.

Western lumber moves eastward. By 1920 large quantities of lumber from the Pacific coast states were being shipped to the north-central part of the country and even as far as New England. Lumber from Washington and Oregon, in ever increasing quantities, is now moving eastward 2000 miles or more by rail and selling in the Central States. Western lumber also goes 7000 miles by way of the Panama Canal to many ports along the Atlantic coast. Some goes to Chesapeake Bay to be reshipped, by rail, to cities west of the Appalachian Mountains, such as Pittsburgh and Cincinnati.

Large markets far from present supply. It is interesting to learn that two thirds of all the lumber now used in our country is consumed in the Central and Eastern states. This part of our country is more densely populated and needs more lumber and wood products than any other section. The great *supply* of timber is in the West and South, while the largest *demand* for wood and wood products comes from the northeastern section of the country.

Increasing costs. In 1736 excellent pine lumber in New England cost about $5.00 per 1000 board feet. A board foot is 1 foot long, 1 foot wide, and 1 inch thick. Today the price of good pine lumber in New England is around $100 per 1000 board feet.

When the early settlers had plenty of wood near their homes, lumber was, of course, very cheap. But as large trees became scarcer, the price of lumber rose, and gradually people had to send farther and farther away for good lumber. It is the cost of transportation, added to the cost of the lumber, that makes the price of lumber high today.

Special credit work. Find out the price of good pine lumber per 1000 board feet in your state today, and report to the class.

Making lumber facts graphic. 1. On an outline map of the United States shade the areas of softwood forests and the areas of forests containing mixed hardwood and softwood trees, using Figure 395 as a guide. Then, by means of arrows, show how the lumbering industry has spread since 1620: Northeastern States ⟶ Lake States ⟶ Southern States ⟶ Northwestern States.

2. Make a bar graph to illustrate the extent to which the acreage of the virgin forests of the United States has been reduced since 1620.

3. Make a second bar graph to show the acreage in the United States today covered by (1) virgin forests; (2) second-growth trees suitable for lumber; (3) young trees large enough to be cut for pulp wood and fuel.

4. It is estimated that in 1620 there were 5200 billion board feet of timber suitable for lumber in the forests of what is now the United States. Today the amount of such timber standing in our forests is estimated at 2200 billion board feet. Make a bar graph to illustrate this reduction of our timber resources.

5. Draw on the blackboard a picture of a piece of wood 1 foot square and 1 inch thick. Label it "A board foot of lumber."

6. Make a graph showing the present-day production of lumber in the ten states each of which produces more than one billion board feet per year. The states and figures are given in Table 13 on page 514.

Giving reasons. Give all the reasons you can to explain each statement below:

1. The forests of the eastern part of our country were both a help and a hindrance to the early settlers because ---------------------.

2. As our country has grown, the demand for wood has become greater and greater because

--.

3. Large areas originally forested in the eastern part of the United States have been cleared of trees because --------------------------.

4. The present cost of lumber is high, especially in the Central and Eastern states, because

--.

5. Large numbers of softwood trees too small for lumber are being cut in the northeastern part of the United States today because ----------.

4. Foreign Trade in Forest Products

Table 35 on page 518 will show you how our exports of lumber compare in value with our exports of various agricultural products. What can you say about our surplus of wood compared with our surplus of cotton and wheat? From Table 36 on page 518 name the wood products that rank high among our imports. What reasons can you suggest for the fact that we both export and import forest products? Newsprint

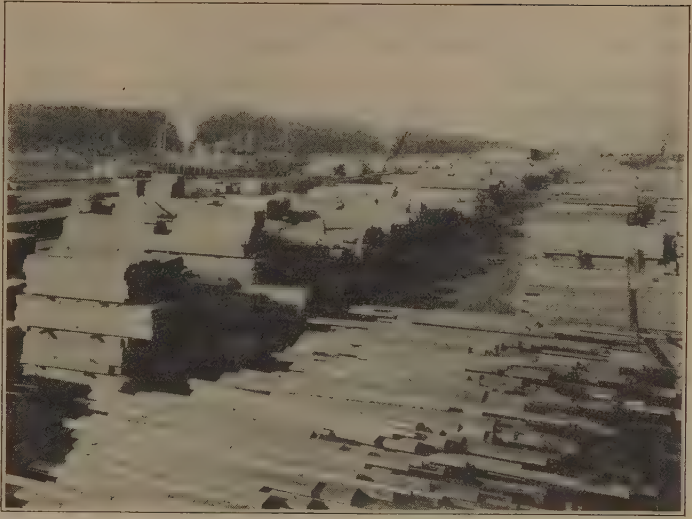


Figure 404. Lumber on a wharf at Seattle, Washington, ready to be shipped to Japan. How do you explain the fact that more lumber is exported from our Pacific ports than from our Atlantic ports?

Our exports. Ever since the early days of settlement along the New England coast the export of lumber has been an important part of our foreign trade. Several of the countries of western Europe have long looked to the United States for supplies of softwood for construction purposes, and several of the tropical countries of America have called upon the United States and Canada for most of the lumber they need.

After the terrible earthquake and fire of 1923, which destroyed much of Tokyo and Yokohama, the Japanese purchased lumber in this country to rebuild their cities, and they have continued to buy large quantities from us ever since. Japan is now our second best customer for lumber, outranked only by Great Britain. Other important customers are Canada, Argentina, Australia, the Netherlands, and Germany. *See Figure 404.*

Our imports. In spite of the fact that we cut immense quantities of lumber in our own country each year and have a surplus for export, we buy lumber from other countries. Part of it is mahogany and other kinds of hardwood from the tropical countries of America, — wood from trees which do not grow in our cooler climate, — but much more of it is softwood lumber from Canada of the same kinds that we ourselves produce. If this seems strange to you, remember that the northeastern quarter of the United States, where the greatest quantities of lumber are consumed, is close to Canada, which has vast evergreen forests. It is natural, therefore, that part of the softwood lumber used in our northeastern states should be purchased from Canada instead of being brought greater distances from the South and the Northwest.

For our great paper-manufacturing industry we import much pulp wood and large quantities of wood pulp. Nearly all the pulp wood comes from Canada. Much of the wood pulp comes from Canada, also, and the rest comes largely from Sweden, Norway, Finland, and the Baltic countries. Purchases of wood pulp have increased rapidly during the last twenty-five years, and our imports now average more than a million and a half tons annually.

How wood is prized in other countries. No one can realize how freely we use wood in our country until he travels in countries where wood is scarce. In many countries the people use very little wood in building houses. They are careful even of small boards, and they plan to use timbers over and over again. In parts of Japan, in China, and in some of the countries of Europe the people gather for fuel tiny branches and twigs which in this country would be looked upon as waste materials. Of all the nations living in the well-watered temperate lands of the world, the Chinese suffer from the greatest shortage of wood. Their forests were cut off thousands of years ago, and since then the people have had very little wood for building houses or for fuel.

The world's timber supply. Many of the European countries have used up so much of their timber that they are now obliged to import wood. European Russia, Sweden, Finland, Norway, Czechoslovakia, Austria, and a few others still have wood to spare; but since those countries are cutting more timber each year than can be grown, their surplus is steadily decreasing and undoubtedly will soon all be needed in Europe.

Mexico and Central America, Africa and South America, have little but tropical woods, and such woods are so hard and so difficult to work that they are much less useful than the softer woods of the temperate zone. China, Australia, and India have less lumber than they need. Canada, like the United States, has great forest resources but is using them rapidly. In all the world there is but one large unexplored and almost untouched temperate forest. That forest is in Siberia, which is part of the Soviet Union.

Some things to explain. Explain why

1. The densely populated countries of western Europe are good customers for lumber.
2. The United States imports lumber from Canada; from tropical America.
3. Imports of wood pulp into the United States have increased rapidly in the last twenty-five years.

5. PLANNING FOR A PERMANENT TIMBER SUPPLY

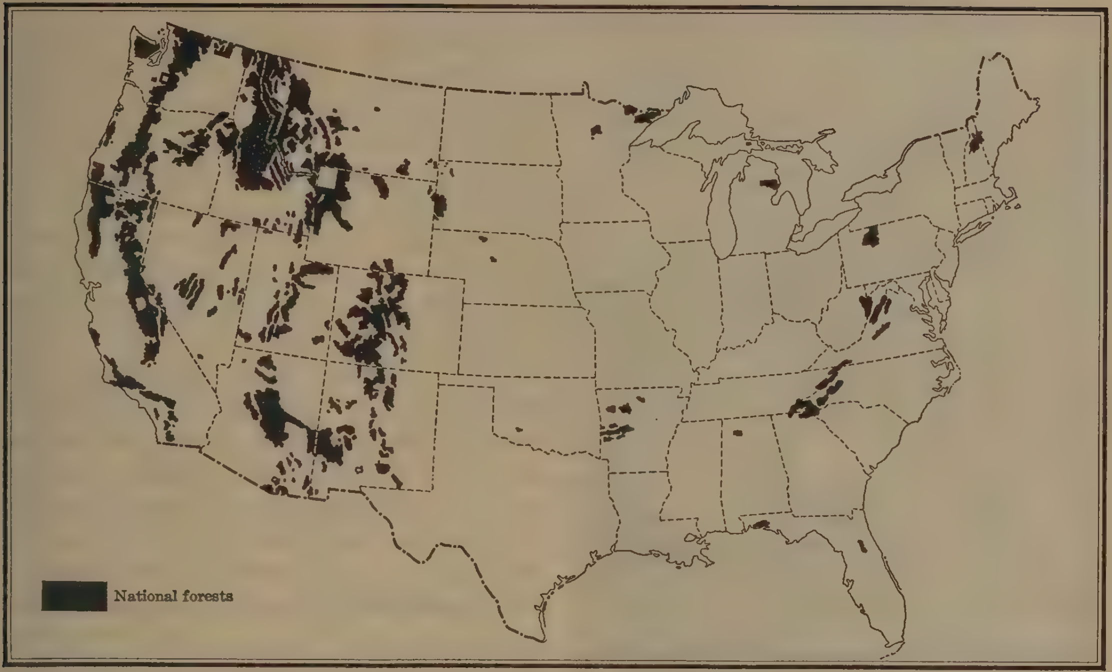
Wood is one of the most valuable of all the raw materials in the world, and the lack of it brings many hardships. It is of great importance, therefore, for us to have in our country a permanent supply of timber which will meet our needs. Do you know what we are doing to make sure of such a supply?

Forest conservation. There are many things that must be done now and always if we are to conserve our forest resources. Lumbermen should cut only the full-grown trees, leaving the young trees to grow, and thus making the forests produce regular "crops" of timber. They should do their work in such a way as to prevent injury to the young trees, and they should clean up all the slash.

Every possible means must be taken to prevent forest fires, and to put them out as quickly as possible when they are discovered. Cut-over and burned-over areas should be reforested, or planted with young trees, so that in time they may again produce timber. Insects and diseases which injure or kill the trees must be fought, and stamped out if possible.

People all over our country now realize the necessity of saving the forests that are left to us, and the better lumbering companies are coöperating with the government in working toward a permanent supply of timber. If this good work continues, we may look forward to the time when yearly crops of timber, from lands cared for as intelligently as our cultivated fields, will provide for the greater part of our needs for wood.

Our national forests. In 1891 the president of the United States was given power to set aside national lands as forest reservations. At that time about 13 million acres of forest lands were reserved. During President Cleveland's second administration, 1893 to 1897, the national forests were enlarged to about 39 mil-



U. S. Forest Service

Figure 405. The national forests of the United States.

lion acres. The movement was now well started. More and more people came to believe that we should have forest reserves, and within a few years the national forests were further enlarged to about 46 million acres.

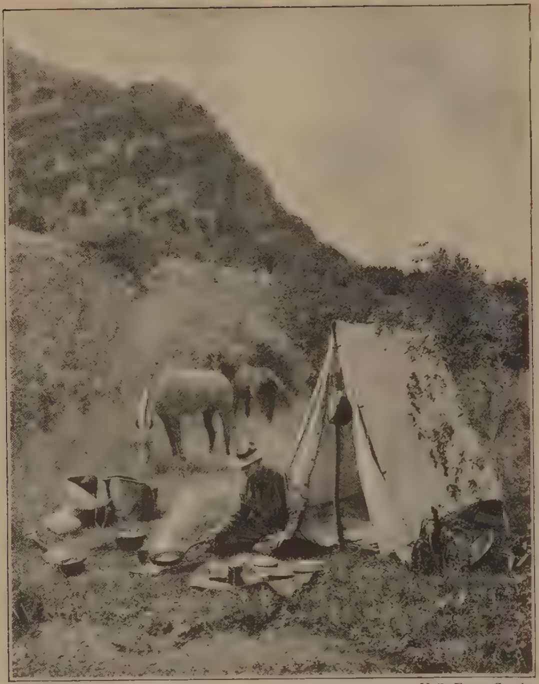
The president who did the most to enlarge our national forests was Theodore Roosevelt. He was an enthusiast for the conservation of all kinds of natural resources, and from 1901 to 1909, while he was in office, the national forests were enlarged to 154 million acres.

There are now 151 national forests, including two in Alaska and one in Porto Rico, and their total area is over 159 million acres. Figure 405 shows that most of the national forests are in the western part of the United States. The principal reason for this is that by the time the national forests were established, the forested lands in the East were largely owned by private persons, but the national government still owned great stretches of forested lands in the mountains of the West. What states in the East have national forests?

The national forests are managed by the Forest Service of the United States Department of Agriculture in such a way as to make them of the greatest possible use. By protecting these forests against fire, regulating the cutting of trees by lumbermen, and reforesting burned-over areas the Forest Service is helping to provide the permanent timber supply which our country needs. At the same time it permits the fullest possible use of the other resources besides timber which the national forests contain. *See Figure 406.*

Lumbering in the national forests. Each year about one billion board feet of lumber are produced from trees cut in the national forests. Ranchmen who live in or near the forests are allowed to have a certain amount of timber free of charge, and lumber companies may obtain permits to cut certain of the mature trees.

13 –



U. S. Forest Service

Figure 406. A forest ranger cooking his supper. The rangers are the men who are employed by the United States Forest Service to patrol the national forests.

The money received from the sale of timber cut under permits in the national forests amounts to more than $3,000,000 each year. This money, and all other money paid by business companies or private persons for the privilege of using resources in the national forests, goes into our national treasury.

Grazing lands in the national forests. There are within most of the national forests open grasslands, and these places, as well as some of the forested areas, make excellent pastures. As you already know, many ranchmen send their stock to the national forests to graze during the summer, paying a small fee for every animal pastured there.

The use of the water power in the national forests. In many of our national forests there are streams where water power can be developed and electricity generated. In order to make possible the development and use of such water power, the government grants permits to power companies to build dams and erect power plants. For these privileges the companies pay a fair rental.

Mining in the national forests. At some places within the national forests valuable minerals are found, and permits to develop the mineral resources can usually be secured. Thus there are mining camps located in some of our national forests.

The protection of wild life in the national forests. Another interesting thing about our national forests is that the wild life is protected. In nearly all the national forests there are bears and deer as well as many smaller wild animals, and in the national forests of the West there are thousands of elk, mountain sheep, and mountain goats. Wise laws governing hunting and fishing are enforced so that the wild life may be preserved for all time. *See Figure 407.*

Camping in the national forests. Free camping privileges in our national forests have made them great summer playgrounds. Thousands of people now spend their summer vacations in these forests, where they find areas set aside as camp grounds. There is plenty of wood which they may use, and there is always a good water supply. The scenery is magnificent, and the mountain air is fresh and pure. By allowing the national forests to be used as playgrounds the Forest Service is doing much to better the health and increase the happiness of large numbers of people.

State forests. In addition to the national forests several of the states have established forests which they maintain and protect. New York and Pennsylvania lead in this movement; but now more than half the states have well-established forests and forestry departments, and they coöperate with the national government in plans to protect the forests from fire.

Questions for discussion. 1. When our government began to set aside large tracts of land as national forests, people who were opposed to the idea said that the valuable resources in these forests would be "locked up" and no one would be able to use them. Has this proved to be true? Give as many facts as you can to support your answer.

2. If, instead of conserving our forests and planning for a permanent timber supply, we should use up most of our timber, could we expect to be able to buy from other countries all the wood we should need?

3. Why should everyone in this country take an interest in the conservation of our forest resources?

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Figure 407. Elk in the Olympic National Forest in Washington. Wild animals are protected in the national parks and in many state parks of our country as well as in the national forests.

Sentences to complete. 1. Far more softwood trees than hardwood trees are cut for lumber because ------------------------------------.

2. North America, Europe, and Asia are more fortunate in their timber resources than South America and Africa because ---------.

3. The acreage of our virgin forests has decreased greatly since the early days of settlement because -------------------------.

4. The largest stretches of virgin forest now left to us are in the West because ----------.

5. Our timber crops of the future will probably come largely from the mountainous parts of our country because --------------------.

6. Crops of pulp-wood trees can be grown more quickly than crops of trees suitable for lumber because -------------------------.

7. Our consumption of pulp wood has increased greatly in the last twenty-five years because ------------------------------------.

8. The greatest markets for lumber in our country are in the Central and Eastern states because ---------------------------------.

9. Our largest supplies of timber are in the South and the West because --------------.

10. Wood plays an important part in both our export trade and our import trade because --.

11. National forests have been established in our country because ---------------------.

A selection test. Select the word or phrase which makes each statement below correct:

1. The leading state in lumber production in the Far West is

California. Oregon. [✓ Washington.]

2. The leading state in lumber production in the South is

[✓ Georgia.] Mississippi. Louisiana.

3. The species of tree cut most largely for lumber in the Northwest is

[✓ Douglas fir.] yellow pine. hemlock.

4. The species of tree cut most largely for lumber in the South is

live oak. [✓ yellow pine.] spruce.

5. The giant sequoias are found in

Texas. [✓ California.] Minnesota.

6. Large numbers of pulp mills are located in

[✓ New York State.] Alabama. Colorado.

7. Our best customer for lumber is

Japan. Argentina. [✓ Great Britain.]

8. The country which supplies us with the most pulp wood and wood pulp is

Norway. [✓ Canada.] Sweden.

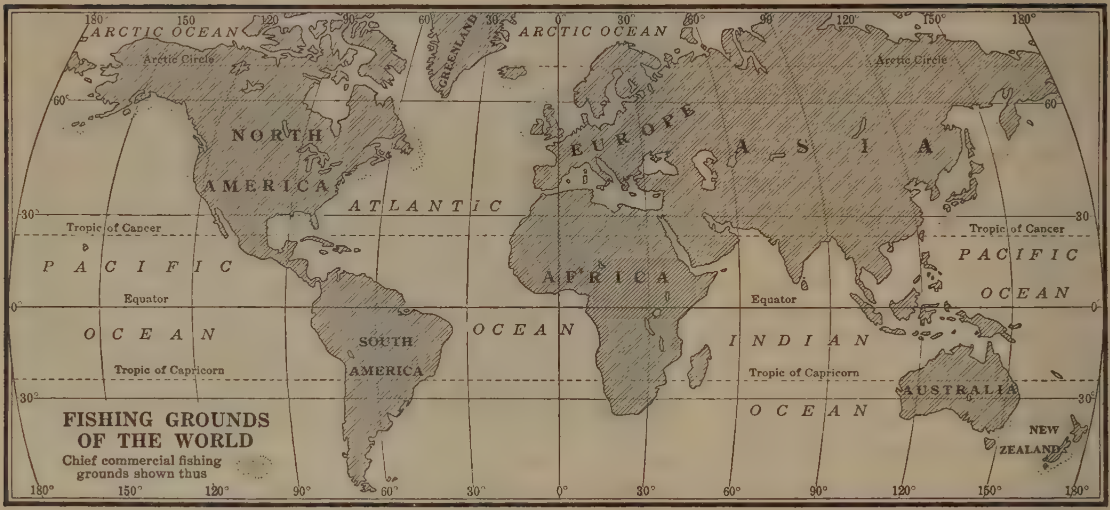

ARCTIC OCEAN
Arctic Circle
ARCTIC OCEAN
Arctic Circle
GREENLAND
NORTH AMERICA
EUROPE
ASIA
ATLANTIC
Tropic of Cancer
Tropic of Cancer
PACIFIC
PACIFIC OCEAN
AFRICA
Equator
Equator
OCEAN
OCEAN
SOUTH AMERICA
INDIAN
Tropic of Capricorn
Tropic of Capricorn
AUSTRALIA
OCEAN
FISHING GROUNDS OF THE WORLD
Chief commercial fishing grounds shown thus
NEW ZEALAND
180°
150°
120°
90°
60°
30°
0°
30°
60°
90°
120°
150°
180°
60
30
0
30

Figure 408. Commercial fishing grounds of the world.

VI. OUR FISHERIES AND THEIR PRODUCTS

Foreword. Fishing was carried on in this country long before the white men came, for the Indians caught fish in the streams and coastal waters for food. From the great heaps of shells near their former homes we know that they had long been accustomed to gather clams and oysters along the shores.

The colonists who settled along our Atlantic coast turned naturally to the sea for part of their food. Finding fish in abundance, they soon began to ship fish to some of the countries of Europe. Fresh fish, of course, could not be shipped across the ocean, but large quantities of cod, herring, and mackerel were dried and salted, smoked, or pickled. Preserved in any one of these ways, they could be exported to distant lands.

For every person engaged in fishing in our country today, there are about 200 persons engaged in some form of farming or stock-raising. Even so, our fisheries are an important source of food, and on the average each person in the country eats fifteen pounds of fish or canned fishery products each year.

In talking of fishing as an occupation, it is common to include not only the catching of true fish, but also the gathering of such creatures as lobsters, crabs, oysters, clams, shrimps, and sponges. We even speak of "whale fisheries" and "seal fisheries." Lobsters, crabs, oysters, clams, shrimps, and sponges are not fish; neither are whales or seals. It is customary, however, to include all occupations which have to do with obtaining animal products from the waters under the general term "fisheries."

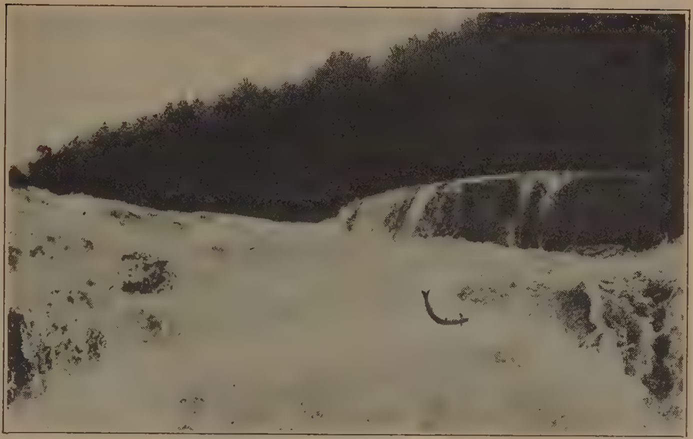
As you study this chapter, find answers to the following questions:

1. What are our most important fishery products, and where are they obtained?
2. What part do fishery products play in our foreign trade?
3. What are we doing to conserve the fish life on which our fisheries depend?

Map study. Before you read further, study Figure 408 carefully. What reason does that map suggest for the fact that the United States is one of the world's great fishing countries?

1. Where and How Fish Live

Fish are found in streams, lakes, and nearly all the ocean waters of the world, but the great commercial "fishing grounds" are confined to a few special areas. Figure 408 shows this clearly. Do you know why fishing as a business is carried on chiefly in these areas?



© Holloway

Figure 409. A salmon trying to jump a cascade, and being thrown back by the force of the water. It will try again and again to get over the cascade until it succeeds or dies of exhaustion.

Cold-water fish and warm-water fish. Fish are found in ocean waters of all temperatures, from the icy waters of the polar seas to the tropical waters where the surface temperatures are as high as 80° F., and a certain amount of fishing is carried on in all latitudes where there are inhabited coastlands. Fish are less abundant in the warm waters than in the cooler waters, however, and some of the warm-water fish are quite different from their cousins in the temperate and polar seas. In general, cold-water fish are more desirable for eating than warm-water fish. How do these facts help to explain the distribution of the world's commercial fishing grounds as shown in Figure 408?

Fish as travelers. It is common for many varieties of fish to migrate with the seasons. Some migrate toward the tropics in winter and toward the poles in summer, just as many birds do. Fish such as the cod, haddock, and halibut live near the bottom in the shallower parts of the ocean. Others, such as the mackerel and the herring, swim about near the surface of the water and wander far and wide over the oceans. Some fish follow regular routes which men have come to know.

The habits of the salmon. Salmon are born near the headwaters of cold streams which flow into the ocean. They live in fresh water until they are a few inches long; then they move out into the open ocean and remain there for two or three years until they have become full-grown. When salmon are ready to spawn, or lay their eggs, they return, with a remarkable sense of location, to the stream where they were born. They swim up the stream, fighting their way through rapids and over cascades, farther and farther, until they reach a place as near as possible to the headwaters. There they lay their eggs in the mud at the bottom of the stream channel. After leaving the salt water the salmon eat little or no food, and they die soon after spawning. *See Figure 409.*

These remarkable habits of the salmon have been discovered in an interesting way. Each year large numbers of young salmon are caught in various streams, and small metal tags dated and marked so that the stream is known are attached to their tails. Then the young salmon are returned to the streams where they were caught. In each year's "catch" of full-grown salmon there are always a few which bear the metal tags. By examining the tags the men who study the habits of the fish have learned how long the salmon stay in the ocean waters, and how generally it is true that they find their way back to the streams where they were born.

The greatest fishing grounds. Although fish can swim about wherever they choose, there are certain varieties which have the habit of remaining near the bottom in the shallow waters which cover the continental shelves. As you doubtless remember, the continental shelves are seaward extensions of the continental lands which lie under comparatively shallow water.

There are certain places on the continental shelves where millions of fish gather to feed. These places are rich "fishing grounds," and are commonly called "fishing banks." Such banks are found off the shores of northeastern Asia, northeastern North America, and northwestern Europe, and these three areas are the greatest fishing grounds of the world.

The best fishing banks near the United States are between Cape Cod and Newfoundland, where cod, halibut, haddock, and other fish come in large numbers each year. The most famous fishing ground is the Grand Bank, near Newfoundland, but there are others equally rich off the coasts of New England and Nova Scotia. The Labrador Current brings cold water southward from the Arctic Ocean to these coasts, providing favorable conditions for fish life. Find this current on the map on page 340.

Some things to do. During your study of our fisheries, do one of the following pieces of work:

1. Collect pictures showing the work of the fishermen in some section of our country.
2. Make a collection of advertisements of fish and fish products.
3. Make a map showing the places where our more important fishery products are obtained.

Committee work. 1. If you live near the coast, visit a pier or wharf where fish are brought in by the fishermen, and report to your class what you see there.

2. Visit a fish market, and make inquiries as to what kinds of fish are sold there and where they come from. Make a report on this subject.

2. THE FISHERIES OF OUR COUNTRY

The coasts of our country where fishing is most important are those of the northeast and the northwest: New England, the Pacific coast from San Francisco to Puget Sound, and Alaska. Commercial fishing is also carried on along the Atlantic coast from New England to Florida, along the coast of the Gulf of Mexico, along the southern half of the California coast, in the Great Lakes, and in the Mississippi River and its tributaries. As you study this section, you will learn about the principal products of these various fishing regions.

Atlantic and Gulf Coast Fisheries

Fishing on the banks. The fishing banks off the coasts of New England, Nova Scotia, and Newfoundland are free, by international agreement, for the use of all nations, and fishermen from almost all the countries bordering the North Atlantic carry on fishing in these waters. These banks are the greatest cod-fishing grounds of the world, and they also yield large quantities of haddock, halibut, and other food fish.

Cod, haddock, and halibut belong to the group of fish called the "bottom-feeding" fish. They swim about freely in the ocean, but they come for at least part of each year to the banks, where they feed near the bottom. Most of those that are caught are taken when they are feeding on the banks in waters from ten to fifty fathoms deep. A fathom is six feet.

Many of the boats that go to the banks are sailing vessels called schooners; but since they are equipped with gasoline engines, they do not have to depend entirely on the wind. Each schooner carries a number of small boats called "dories," for use on the banks.

Some of the fishing is done from the decks of the schooners, but much more of it is done from the dories. The fishermen use long lines called "trawls," to which are attached hun-

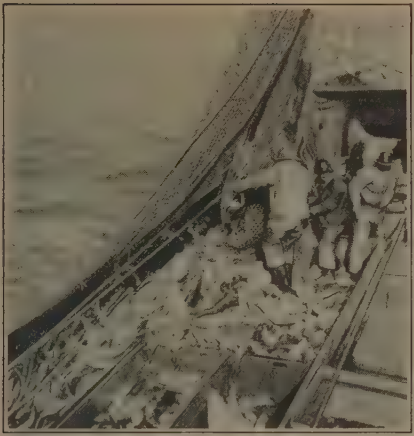


Figure 410. Fishermen emptying the big baglike net on the deck of a trawler. The fish are mostly cod and haddock.

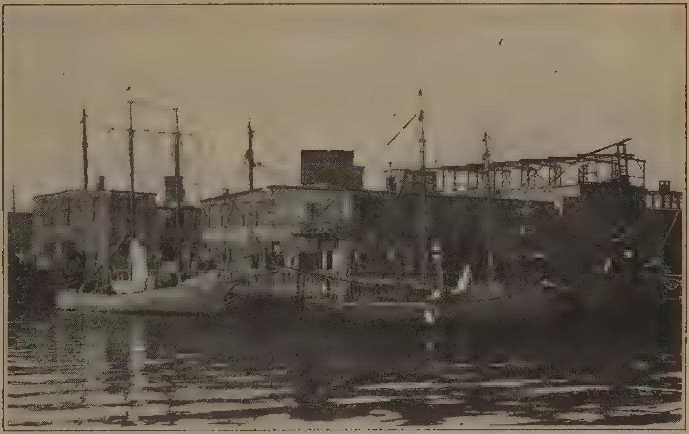


Figure 411. A cold-storage plant for fish at Portland, Maine. The boats that you see in the picture are schooners which have just come in from one of the fishing banks loaded with a good catch.

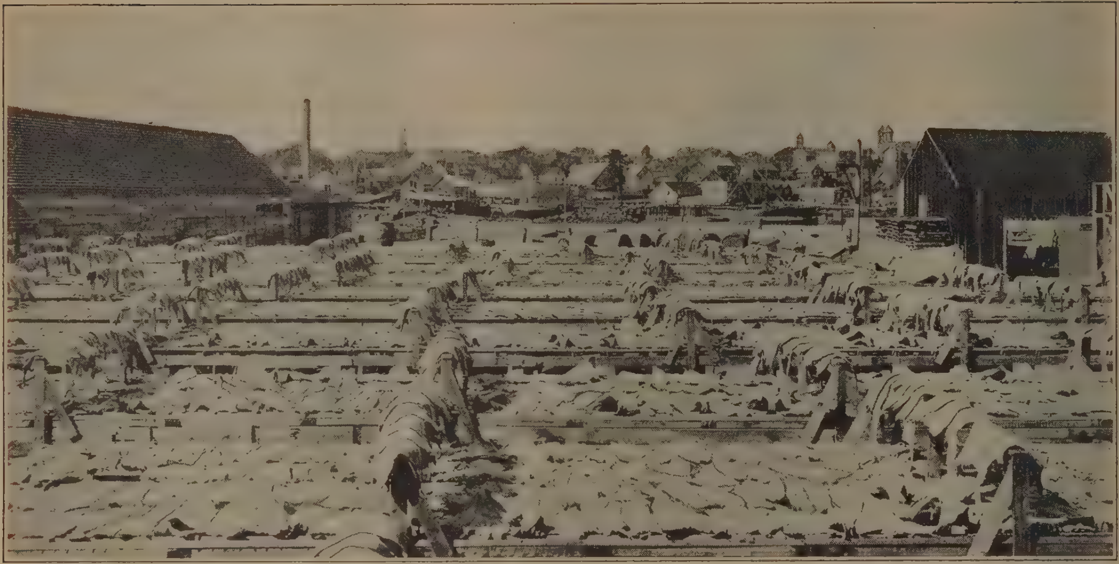
dreds of short lines which carry the hooks. Each hook is baited with a clam or a herring; then the trawl is thrown overboard and the hooks sink almost to the bottom, offering their tempting bait to the fish. When the fish are plentiful, a skillful fisherman can fill a dory three or four times a day. Each time he fills his dory, he takes his catch to the schooner, which is waiting close by.

In recent years more and more fishing on the banks has been done from boats called "trawlers," which are equipped with engines and have no sails. From these boats the fishing is done by dragging a large baglike net along the sea bottom. The bag is towed slowly along for an hour or more, and then hauled up with the catch. One "haul" of such a net brings up hundreds, and sometimes thousands, of fish. The nets can be used only on sandy bottoms, however, for if they are dragged over rocky bottoms they are torn and ruined. *See Figure 410.*

The modern schooners and trawlers carry wireless outfits, and the captains keep in touch with their home ports. Each day they send in reports of their location, their catch of fish, and their plans for returning.

New England fishery centers. Each year fish amounting in value to $18,000,000 or more are brought to New England ports by New England fishermen. Haddock has now become the most valuable kind of fish caught by the fishermen on the banks, and cod is second. Boston and Gloucester, in Massachusetts, and Portland, Maine, are the three leading centers for receiving the fish and preparing it for shipment to inland markets and to other countries. Boston has the largest single pier in the world devoted to the fish business, and Gloucester is the leading center in the United States for the salting of codfish. *See Figures 411 and 412.*

Mackerel fishing. The mackerel fishing grounds extend from Cape Hatteras, in North Carolina, to the Gulf of St. Lawrence. Mackerel are one of the kinds of fish which migrate equatorward in the winter and poleward in the summer. Those that come north along the Atlantic coast of North America appear in the vicinity of Cape Hatteras about April first, and the fishing begins there at that time. The most important mackerel fisheries of the world, however, are those of the waters off the coast of Maine, where the fish are caught



Courtesy of Chamber of Commerce, Gloucester, Mass.

Figure 412. Drying codfish in the sun at Gloucester. Before being spread out to dry the codfish are split, cleaned, and salted. When the fish are sufficiently dry, they are shredded and packed in boxes for shipment. Salt codfish packed at Gloucester is sold in every state in our country and in many foreign countries.

from June until November. As the mackerel migrate, they travel in great "schools," in which thousands of them swim together near the surface of the water, and the fishermen catch them in large nets.

Herring fishing. The herring fisheries are also important along our eastern coast. Herring, like mackerel, swim near the surface of the water and are caught in large nets. Many of these fish are smoked for market, and many are canned and sold as sardines. The herring are caught in largest quantities north of Cape Cod, and Maine is the state which is best known for the production of sardines and smoked herring.

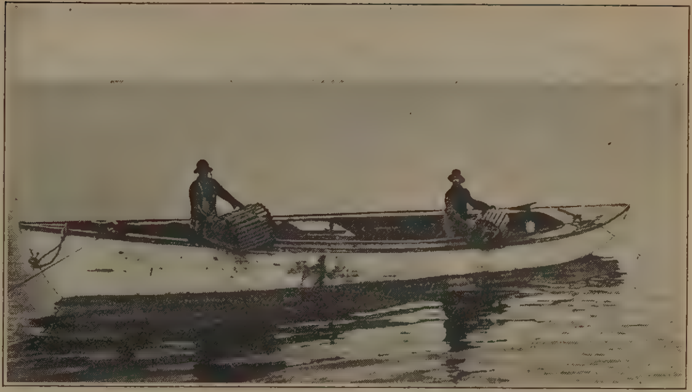
Other food fish. There are many other kinds of fish which are caught along our Atlantic coast, and which contribute to the variety of the food supply. Among them are the large surface-swimming swordfish, the small flounder, or flatfish, which lives on the sea bottom, and the shad and striped bass which spawn in the rivers along the Atlantic coast.

Menhaden fishing. The fish called menhaden range along our entire Atlantic and Gulf coasts, but the best fishing grounds for them are in the waters between Long Island and Cape Hatteras. They are from twelve to eighteen inches long, and their habits are much like those of herring. They swim near the surface, and in the spring they may be seen in schools of a million or more. It is not uncommon for fishermen to make a single catch of half a million menhaden with a great purse-like net. In tonnage the catch of menhaden is greater than that of any other kind of fish taken along our Atlantic shores. People as a rule do not eat menhaden, but these fish are used in large quantities in the manufacture of oils and fertilizer, and of fish meal for cattle and poultry feed.

At places along the Atlantic coast, farmers catch large quantities of fish and spread them on the fields that are to be cultivated. After a few days they plow the fields and thus mix the fish with the soil.

Fishing in the warmer waters south of Cape Hatteras. In the Gulf of Mexico and northward along the Atlantic coast as far as Cape Hatteras, the warmth of the waters is sufficient to cause certain differences between the fish life along these shores and that farther north. The warmth is due partly to the lower latitude, but more largely to the Gulf Stream. Trace the course of this warm ocean current on the map on page 340.

Instead of the haddock, cod, halibut, and other kinds of cold-water fish which are caught in such large quantities farther north, the fishermen of our south Atlantic and Gulf coasts bring in warm-water fish such as mullet, Spanish mackerel, and red snapper. In value, however, shrimp and oysters, both of which are shellfish, are the most important fishery products of these coasts.



Courtesy of Canadian Government Motion Picture Bureau

Figure 413. Lobstermen hauling their pots. The baited lobster pots rest on the sea bottom, attached by ropes to wooden "floats" on the surface of the water. The pots are traps made in such a way that the lobsters can crawl into them but cannot get out again.

Shellfish. Shellfish are small sea animals which grow shells to protect their soft bodies. Among the many varieties are lobsters, crabs, shrimp, scallops, clams, and oysters, which are good to eat and are taken in large quantities from the coastal waters along our eastern shores.

Lobsters and crabs crawl about on the sea bottom near the shore and can therefore be caught easily. Crabs are found all along our Atlantic and Gulf coasts, but the blue crabs most commonly eaten in this country live in the warmer waters south of Cape Hatteras. Lobsters are found as far south as New Jersey, but they are most abundant along the coasts of New England and Nova Scotia. They are caught in traps called lobster pots, and in Maine, especially, lobstering is an important branch of the fisheries. Large quantities of the lobsters are sold alive or freshly boiled, and some are canned. *See Figure 413.*

Shrimp are small warm-water shellfish which live along our eastern coast from the southern part of North Carolina to Texas. They are caught by dragging nets along the sea bottom. Scallops are abundant in the waters bordering the southern shores of New England. They grow in beds from which they are obtained by dredging. The part that is eaten is the muscle which the little animal uses in opening and closing its shell. Clams are found along our entire eastern coast from Maine to Florida. They bury themselves in the mud and sand close to the shore, and people dig them when the tide is out.

All the shellfish find ready markets in the large cities near the coast, and large quantities are also canned and sold in other parts of the country. The shellfish most prized in this country, however, is the oyster.

Our oyster industry. Of all the fishery products of the United States, oysters are the most valuable. These shellfish are abundant at many places along our eastern coast from Cape Cod to Florida, and at certain places along the coast of the Gulf of Mexico. At present Long Island Sound, Delaware Bay, and Chesapeake Bay are the leading centers of the oyster industry.

Oysters grow in beds at the bottom of bays and harbors where the salt sea water is mixed with fresh water brought from the land by rivers. Such water is said to be "brackish." Some of the oystermen go out in small boats and gather the oysters with long-handled tongs. Others go out in larger boats which are equipped with machinery for dredging the oysters. *See Figure 414.*

Oyster farming. In 1855 a group of oystermen spread clam shells over certain parts of the East River bottom, near New York City, which were not at that time producing oysters. Large numbers of young oysters soon attached themselves to the clam shells, and began to grow. After a time the oystermen transplanted many of the young oysters and cared for them until they were large enough to be marketed. This was the beginning of oyster farming, which is now practiced on a large scale, especially in Long Island Sound and in Delaware and Chesapeake bays. Today more than half of all our oysters come from planted beds.

In order to carry on oyster farming, an oysterman must lease from the state an area of "bottom" large enough to provide him with space for spreading shells to attract his "seed oysters" and for transplanting many of the young oysters so that they will have room enough to grow well. Some places are much better for oyster farms than others. For example, if they are too near the mouths of rivers the water is apt to be too fresh. The oyster farmer must also avoid places where rivers or shore currents deposit large quantities of mud, for in such places the mud may bury his entire crop of oysters. Men take risks in oyster farming just as in farming on the land, and those who use the best judgment in locating their farms and caring for their crops get the best results.

Most of the oysters are gathered in the eight months beginning in September and ending in April. Large quantities of oysters are packed in ice and shipped fresh to cities along the coast, and refrigerator cars carry them long distances inland. In addition, large numbers of oysters are canned. Baltimore has become the greatest market for oysters in our country, and the leading center of the oyster-canning industry.

Our sponge fishery. The sponge is a simple form of animal life, and it lives attached to the sea bottom in regions where the waters are fairly warm. The sponge fisheries of the Old World are located in the eastern half of the Mediterranean Sea. Those of the New World are located around the Bahama Islands and along the southern and western coasts of Florida. The sponges are gathered either by the use of hooks or by divers. Diving is the better method, for the hooks are apt to tear the sponges, while the divers who go down into the water can loosen the sponges more carefully. *See Figure 415.*

The sponges that we buy in the stores are simply the skeletons of the animals. When they are taken from the water they are dark green or almost black, and much work must be done to remove all the fleshy matter and make the skeletons clean and soft.

On the coast of Florida there are villages of Greek people who are engaged in gathering and marketing sponges. The older men in these villages learned how to carry on this business in Greece, and they have taught their sons how to get the sponges and prepare them for use. These sponge fishermen and their families keep up many of the Greek customs while living in this country.

Giving reasons. Complete each of the following sentences by giving reasons as fully as you can.

1. Some of the richest fishing grounds of the world are located off the northeastern coast of North America, between Cape Cod and Newfoundland, because ______________________,

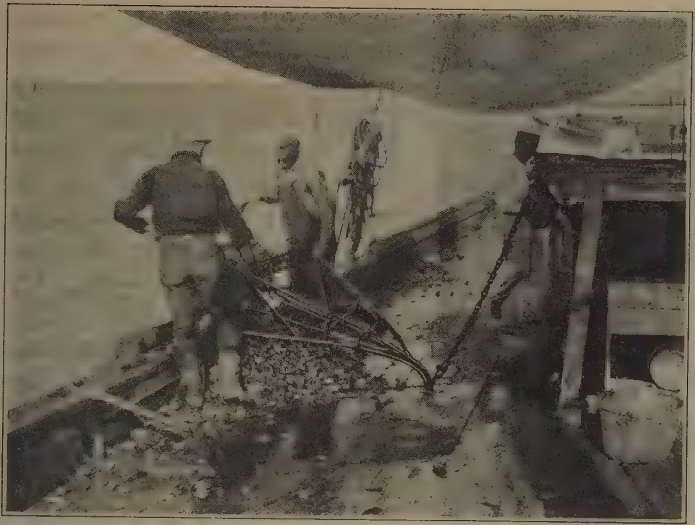


Figure 414. Dredging for oysters in Delaware Bay. These oystermen are using a dredge run by an engine. The dredge has just been drawn up, and the oysters are being dumped on the deck of the boat.

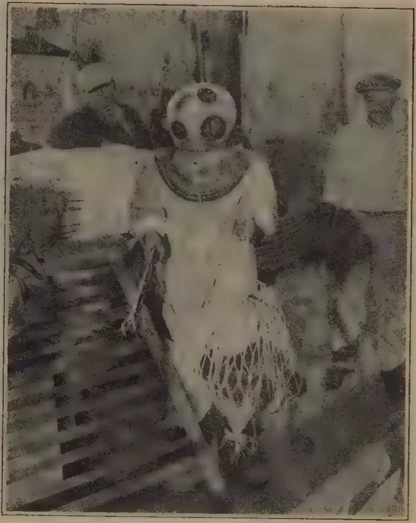


Figure 415. A Florida sponge diver with the hook and bag which he uses in gathering sponges from the sea bottom.

2. More fish are caught along our Atlantic coast north of Cape Hatteras than south of that cape because ______________________.

3. The coastal waters south of Cape Hatteras are warmer than those to the north because ____________________________________.

4. Fishermen from many different countries come to the banks bordering the northeastern coast of North America because ____________________________________.

5. The methods used in catching cod and haddock are different from those used in catching mackerel and herring because ____________________________________.

6. There is no mackerel fishing in winter along our northeastern coast because ____________________________________.

7. Menhaden, though not very good to eat, are caught in large quantities because ____________________________________.

8. The fish caught in the Gulf of Mexico are different from those caught off the coast of New England because ________________.

9. Lobsters, crabs, shrimp, scallops, clams, and oysters are called shellfish because ____________________________________.

10. Many oystermen are called "oyster farmers" because ____________________________.

Can you name these places?

1. The largest and most famous fishing bank near the United States. Grand Bank

2. The New England city which has a great pier devoted to the fish business. Boston

3. A city famous for its salted codfish. Gloucester,

4. A New England state which has many sardine canneries. Maine

5. Three bodies of water which are the leading centers for oystering. Long Island Sound, Delaware Bay, Chesapeake

6. The Southern state well known for its sponge fishery. Florida

Committee work. Divide the class into seven committees, and let each committee choose a chairman. Write the names of the following kinds of work on separate slips of paper and let each chairman draw one.

Cod fishing
Salmon fishing
Oystering
Sponge gathering
Lobstering
Shrimp fishing
Mackerel fishing

The members of each committee should find out all they can about the kind of work they have drawn, and should make an interesting report to the rest of the class.

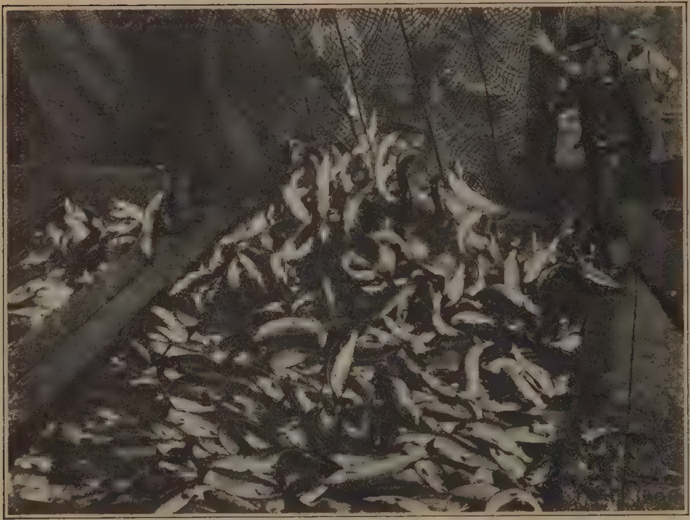


Figure 416. Puget Sound fishermen emptying a great net in which hundreds of salmon have been trapped. In addition to all the salmon which are canned, many are frozen, pickled, or smoked.

Pacific Coast Fisheries

Favorable conditions for fish. Along the Pacific coast of North America the continental shelf is much narrower than on the Atlantic coast. This western coast, however, has many excellent fishing grounds, especially northward from San Francisco.

An ocean current that moves southward along the coasts of British Columbia, Washington, Oregon, and northern California brings cold waters to these shores. This helps to make conditions favorable for the kinds of fish that we like to eat, much as the Labrador Current does off the northeastern coast of the continent.

Salmon fisheries. From San Francisco northward to the mouth of the Yukon River in Alaska are the greatest salmon fisheries of the world. Each year, during the season when the salmon are running upstream to spawn, millions of them are caught in nets placed in the rivers for this purpose. Many are packed in ice and shipped to be eaten fresh, but at each of the fishing stations the greater part of the salmon catch is packed in cans. *See Figures 416 and 417.*

The canning season is a very busy time at the fishing stations. Each day large barges of fish are towed from the rivers to the canneries. A single barge may contain as many as 20,000 fish. The fish are carefully cleaned, packed into cans, and cooked. Later each can is inspected several times and those that are not perfectly airtight are discarded.

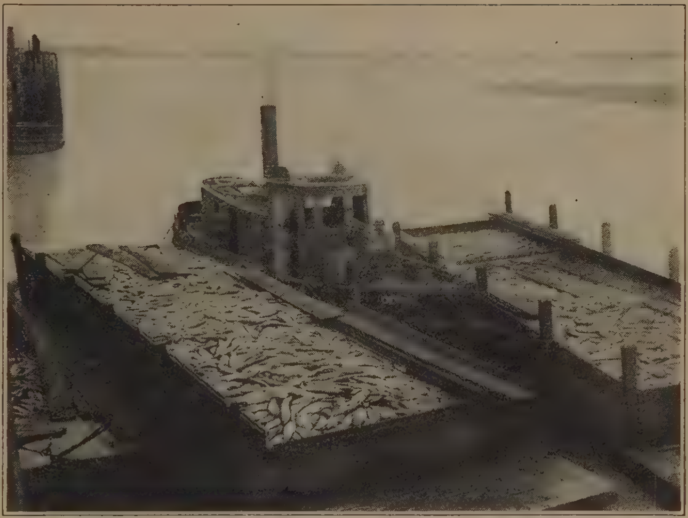
There are about 180 salmon-canning plants along the coasts of Washington, Oregon, and Alaska. Of these, about 130 are in Alaska, where the ice-cold rivers from the mountains are favorite places for the salmon to spawn. During a recent year the combined output of all the salmon-canning plants on our Pacific coast was valued at about $50,000,000. Canned salmon are by far the most valuable of all our fish products that enter foreign trade.

Cod and halibut. Cod and halibut are caught chiefly near the Alaskan peninsula, on certain banks in Bering Sea, and off the coast of British Columbia, although they are found as far south as California. They do not go so far north as the Arctic Ocean. These fish are not so abundant along the Pacific shore as along our north Atlantic coast, but they more than supply the local markets, and large quantities are shipped to Hawaii and Mexico. The catch of halibut is of much greater value than the catch of cod.

Sardines. Along the coast of California small fish called pilchard are caught. They are almost the same as the herring of the Atlantic coast, and are canned in the same way to be sold as sardines. During the last few years the output of sardines in California has been greater than the output in Maine and Massachusetts.

Tuna. There are several kinds of fish that are much alike called tuna, or tunny. Some of them grow to be ten feet long and weigh up to 1000 pounds. These fish swim about in the high seas, and sometimes come near to the shore. They are very good fish to eat, and along the coast of California large numbers are caught each year. Much of the catch of tuna is canned and shipped to all parts of the United States.

Shellfish. Clams are gathered along the coasts of Oregon, Washington, and southeastern Alaska, and about twenty plants pack clams for shipment to market. Crabs, though not so plentiful as on our eastern coast, are caught along the shores of Washington and southeastern Alaska, and some of them are canned for shipment. Some oyster farms have been started in bays near San Francisco, but as yet oyster farming is not an important industry on the Pacific coast.



U. S. Bureau of Fisheries

Figure 417. Barges loaded with salmon on their way to a cannery in Alaska. Canned salmon from Alaska, Washington, and Oregon make up, in value, about half of all our canned fishery products.

The fur-seal fishery of Alaska. Off the west coast of Alaska are the Pribilof Islands, where large numbers of seals gather each summer. These are the kind of seals which provide the valuable sealskins used for expensive fur coats, and many thousands of dollars' worth of skins are obtained from the islands each year.

Fresh-Water Fishing

Fishing for sport. Many of the small lakes and streams in the northern part of our country are well stocked with good food fish, and fishing in these waters is carried on as a sport, especially during summer vacation periods. The fish are hard to catch, and this is what makes the fishing such good sport.

Fishing in the Great Lakes. The Great Lakes contain many varieties of excellent food fish, among which are whitefish, lake trout, lake herring, and pike. These are the kinds of fish caught in largest quantities in the Great Lakes and the kinds most commonly eaten by the people who live near these large bodies of fresh water. The Great Lakes fisheries provide work for about 8000 American people, and most of the fish that are caught are sold in the lake ports of the United States and Canada.

From each of the larger lake ports scores of small fishing boats go out each day. When the lakes are frozen over in the winter, some fishing is done through holes cut in the ice.

Commercial river fisheries. Commercial fishing is carried on more or less in most of the larger streams in the interior of our country, and in some of them mussel shells are gathered for use in the manufacture of pearl buttons. From the Mississippi River and its tributaries several million dollars' worth of fish and mussel shells are taken each year.

By-products of our Fisheries

Products other than food. Our fishermen, besides providing millions of tons of good food, bring to our markets other valuable products. For example, shells from the oyster, clam, and scallop fisheries are crushed for poultry grit or for road-surfacing, or they are used for making lime. Cod-liver oil is a valuable by-product of the cod fisheries, and liquid glue is made from fishskins and certain other parts of fish that might otherwise go to waste.

In the early days in New England, the Indians taught the colonists to fertilize their cornfields by putting one fish in each hill of corn. That was the beginning of the use of fish for fertilizer in this country. Today, as you know, large quantities of menhaden are caught for the special purpose of making fertilizer, and all kinds of fish refuse are used for the same purpose. Thus our fishermen help our farmers.

Conservation of our Fish Supplies

The need for conservation. Although fish multiply rapidly, past experience has proved that their numbers can be greatly reduced if everyone is allowed to take all he wishes and if nothing is done to safeguard fish life. Our fishery resources are much too valuable to be wasted, and so several steps have been taken to keep up our supply of fish. These conservation measures have to do chiefly with the fish in our fresh-water lakes and streams and the shellfish along our coasts.

Fishing laws. Laws have been passed that make it illegal to take fish under certain sizes from the lakes and streams. When undersized fish are caught, it is the duty of the fishermen to throw them back into the water. A similar law has been passed to prevent the taking of small lobsters from the sea.

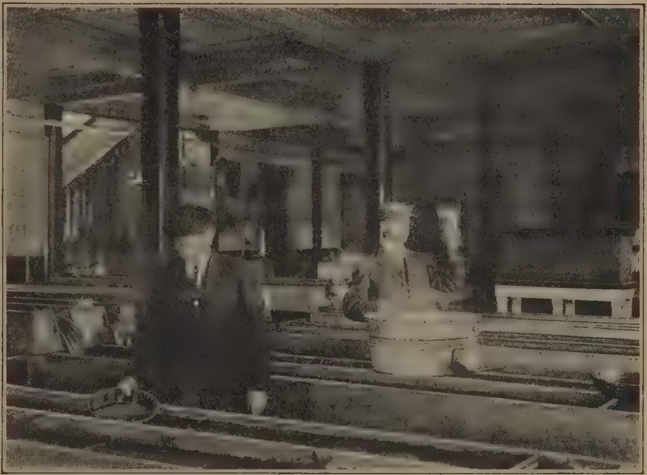
In certain of the Western states it is illegal to sell mountain trout unless they are raised in a privately owned pond. This law was passed so that fishermen out for sport will not take more fish than they want to eat while in camp.

We have very strict regulations controlling the catching of salmon. Nets cannot be placed all the way across the streams, nor can they be kept in streams continuously from week to week. Each day or each week the nets must be raised or opened for a certain length of time, so that some of the fish that are trying to swim upstream to spawn may succeed. Otherwise no salmon eggs would be laid, and within a few years our supply of this valuable fish would be gone.

Restocking our waters. The restocking of the streams, lakes, and ponds is now carried on by the national government and by many of the state governments. At our fish hatcheries millions of fish eggs are hatched, and the young fish are shipped to streams and lakes where there is so much fishing as to make restocking necessary. *See Figure 418.*

Both Canada and the United States are active in restocking the Great Lakes with fish, and each year they put about one and one-half billion "fry," or young fish, into these waters. Of the thirty fish hatcheries near the shores of the Great Lakes, sixteen are owned by the bordering states, five by the United States government, five by the Canadian government, and four by the province of Ontario.

Seals on the Pribilof Islands are protected by the United States government, but each year a certain number of males are killed for their skins by a company that pays a license fee for that privilege. For years our government could not control the killing of seals beyond three miles from the islands, and many mothers were shot at sea while out for fish to feed their young. That meant the death of the young seals also. Now, by a treaty between the United States, Canada, and Japan, the killing of the seals at sea is regulated.



U. S. Bureau of Fisheries

Figure 418. In a trout hatchery in West Virginia. The man in the background is inspecting trout eggs, and the other man is putting the eggs in trays where they will hatch.

Giving reasons. 1. Conditions are favorable for fish life along our northwestern coast because ____.

2. Salmon are caught in the rivers of the Northwest rather than in the open ocean because ____.

3. It is important that some of the salmon should reach the headwaters of the streams because ____.

4. Among the fishery products which are canned on the Pacific coast ______ are the most important because ____.

5. The Pribilof Islands are valuable to us because ____.

6. It is important for us to conserve our supplies of fish because ______________________.

7. Many fish hatcheries have been established in the United States because ______________.

Special credit work. If there is a fish hatchery near your home, visit it and tell your classmates what you see there.

3. Our Trade in Fishery Products

In shipping fish from place to place in this country or to foreign countries, what difficulties must be overcome? Fish cannot be shipped alive as other animals are, for it is too expensive to provide water for them to live in while being transported. The older ways of preparing fish for shipment to distant places are to dry and salt it, or to smoke it, so that it will not spoil even if the weather is warm. Another and more modern way is to can the fish, and so keep the air from reaching it. Do you know of still other ways in which fish can be shipped?

Fish packed in ice. Fresh fish spoils so quickly in the air that it must be kept very cold. Packed in ice it can be sent some distance, the distance depending on the weather and the amount of ice used. Modern refrigerator cars and fast freight trains help the men in the fish business to send fresh fish several hundred miles inland from the coast.

Frozen fish. The freezing of fish, which has come into use in recent years, has made great changes in the fish business. Many of the fish now brought to the cities and towns along the coast are cleaned and packed away in cold-storage plants, where they soon become frozen as hard as sticks of wood. They may be kept there weeks or months without danger of spoiling. When they are needed, they can be shipped in cold-storage cars for hundreds of miles or sent across the seas in ocean liners which have cold-storage rooms. Even the ships that cross the tropics can carry frozen fish, and passengers can be served at meals with various kinds of fish that were caught thousands of miles away.

The United States Bureau of Fisheries reports that the cold-storage plants of this country keep on hand at all times from twenty to sixty million pounds of fish. The freezing of fish is of great advantage because it prevents waste of fish at times when more are caught than are needed, and because it provides the people of the entire country with a variety of fish food at all times of year.

Foreign trade in fishery products. When compared with our foreign trade in agricultural products and manufactured goods, our trade in fishery products is not large, yet it amounts to a good many millions of dollars each year. The fish which we import for food come chiefly from Canada and Mexico. Other imports of fishery products are fish oil, pearls, and sponges.

Most of our exports of fishery products are canned salmon and canned sardines. Our best customer for these products is Great Britain, and our own territory of the Philippine Islands is next. We also ship large quantities of them to British Malaya, India, and the Dutch East Indies, to France and Belgium, and to Canada, Australia, and Argentina.

Fishing is not one of our leading industries, yet the United States, with Alaska, stands second among the countries of the world in value of fishery products, and is outranked only by Japan. Great Britain is third and Spain is fourth. Thus we are one of the great fishing nations.

Sentences to complete. 1. Examples of bottom-feeding fish are cod, haddock, and halibet.

2. Examples of surface-swimming fish are herring and mackerel.

3. It is the habit of salmon to swim far up cold-water streams to spawn.

4. The shellfish that are caught in traps are ---------.

5. The shellfish that are dug on mud flats when the tide is out are clams.

6. The shellfish that are raised in large quantities on "farms" are oysters.

7. Maine "sardines" are small herring.

8. California "sardines" are pilchard.

9. The very large fish caught for canning off the coast of California are called tuna.

10. The best fur seals are obtained on or near the Pribilof Islands.

Locating fisheries. Copy the following list of fish and shellfish on a clean sheet of paper. Opposite the name of each one write the place where you might see fish and shellfish of that kind being caught or gathered.

cod
herring
shrimp
salmon
haddock
mullet
clams
lobsters
mackerel
menhaden
oysters
tuna

Explaining our rank as a fishing country. Tell how each fact stated below helps to explain why the United States ranks high among the fishing countries of the world.

1. Our country borders two great oceans and our coast line is very long. greater shelf

2. Our coast line extends through many degrees of latitude. fish move

3. There are broad shallow-water areas near our northeastern coast. best fishing grounds

4. There are many bays and harbors along our coasts. oyster beds fishing

5. There are many fresh-water lakes and many streams in our country. fish can live

6. Ways of canning fish and shellfish have been invented. more can b

7. Ways of freezing fish have been discovered. preserving them longer

The world's leading fishing countries. The leading fishing countries of the world in the order of value of their fishery products are (1) Japan, (2) the United States, (3) Great Britain, (4) Spain, (5) the Soviet Union, (6) Canada, (7) Norway, (8) France. Locate each of the foreign countries in this list on a wall map or on the map on pages 330–331, and explain why it is an important fishing country. In making your explanation, you will find it helpful to ask yourself the following questions about each country:

1. Is this country located near good fishing grounds?

2. Is it so densely populated that the problem of food supply is serious?

3. Does it suffer from any handicaps to farming? If so, what are the handicaps? In what way have handicaps to farming led to the development of the fishing industry?

VII. RESOURCES BELOW THE SOILS

Foreword. The Europeans who came to this country in the early days of settlement were familiar with the use of farm lands, pasture lands, forests, and fishing grounds, for they had lived in countries where farming, stock-raising, lumbering, and fishing were common occupations. It was more difficult, however, for the newcomers to find and make use of the resources that were hidden in the ground. As years passed and the sciences were developed, this country came to have great engineers and inventors, and their work led more and more to the search for natural resources below the soils.

Before you read further, make a list of all the resources you know of which are found below the soils. Make another list of the kinds of business or industry which you know to be dependent on such resources. Keep these lists and add to them as you study this chapter.

1. THE WATER IN THE GROUND

What proofs can you give of the fact that there is water in the ground? Where do you think that water comes from? Of what use is the water in the ground to man? If you cannot answer these questions now, you will be able to do so after you have studied this section.

What happens to rain water. When it rains, at least three things may happen to the water that falls on the ground: (1) it may evaporate and immediately pass back into the air, helping to form the clouds from which, in time, rain will again fall; (2) it may run off over the surface, helping to feed the rivers which, in turn, help to provide the water in ponds, lakes, reservoirs, and inland seas; (3) it may sink into the ground, there to furnish moisture for plant growth and water for wells and springs. The amount of water in the ground determines in large part the distribution of good farm lands, grazing lands, and forests.

The ground water table. In all regions of moderate or heavy rainfall, where there is a good body of soil and subsoil, it is possible by digging into the ground to reach a depth where water will flow into the hole. If we dig several such holes not far apart, we find that water comes to stand in each one of them at about the same level. That shows that all through the ground in that particular region there is water at about that level.

The upper surface of the underground water is called the *ground water table.* The depth of the ground water table varies with the amount of rainfall. When we have an especially rainy season, how should you expect the ground water table to change? Suppose we have a very dry season. How will that affect the ground water table?

In some places there are streams underground, but in most places the ground water simply fills the tiny spaces in the rocks. The ground water table is not actually level, for it is much higher in the hills than it is in the lower places. In form, then, the ground water table is somewhat like the land surface which lies above it. *See Figure 419.*

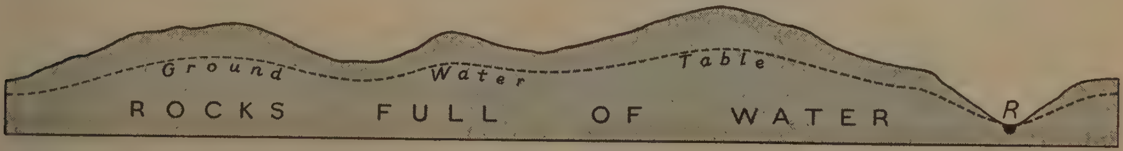


Figure 419. A diagram showing the ground water table in a hilly region of abundant rainfall. R is a river. Where the valley of the river has been cut below the water table, ground water seeps into the stream.

Common wells. Long, long ago people learned to get water from the ground by digging wells. A well hole must, of course, go below the ground water table; otherwise no water will flow into it. If a well "goes dry," it means that the water table has become lower; and unless the well is deepened, no water can be obtained from it until the water table rises again. Therefore, in order to be sure of an unfailing supply of well water in any particular region, the well holes must go down below the level to which the water table is likely to sink during a period of drought in that region.

Common wells of this kind vary greatly in depth according to the level of the water table. After a well hole has been dug or drilled, some means of raising the water from it must be found. In olden days water was lifted from wells in buckets by hand power. Then hand pumps were invented, and finally various ways of pumping water by machinery. Today the commonest ways of pumping water from wells in our country are by the use of windmills, gasoline engines, or electric motors, but there are still many country homes where well water is pumped by hand.

Artesian wells. At some places on the earth it is possible to drill well holes deep into the ground and find water which will rise to the surface without pumping. This was first done in the province of Artois in France, and for that reason English-speaking people call such wells *artesian wells.*

The water that rises to the surface in an artesian well comes from a layer of porous rock that is filled with water. Somewhere, at a higher level, perhaps many miles away, that layer of rock comes to the surface, and the rain water that falls on it sinks into it. Little by little the water fills all the open spaces in the layer of rock. The pressure of the water is then so great that some of the water is forced upward through the pipe that is put down when an artesian well is drilled.

To have an artesian well, however, something more than a collecting ground for the water at a higher level is necessary. Overlying the porous rock layer must be a layer of rock which is *impervious* to water; that is, a layer through which water cannot pass. This layer prevents the water in the porous layer from moving upward until a hole is drilled from the surface to release it. *See Figure 420.*

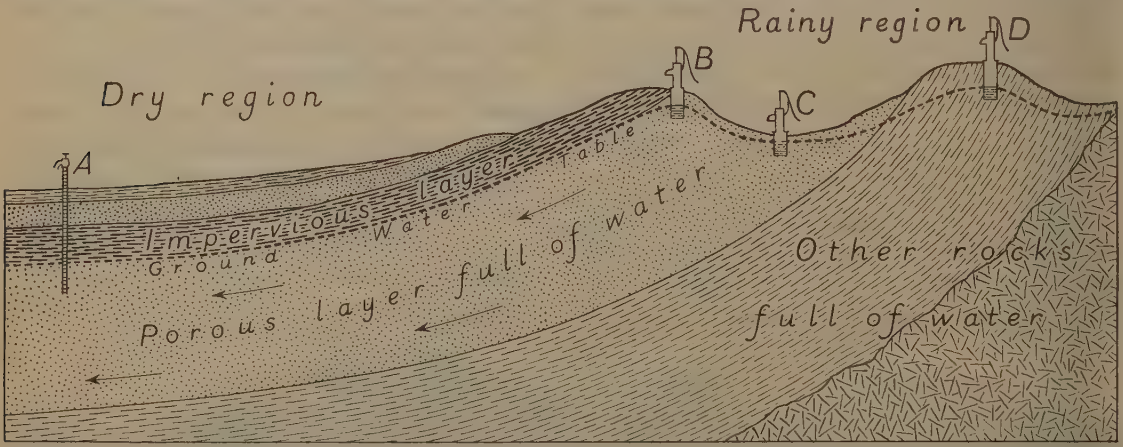
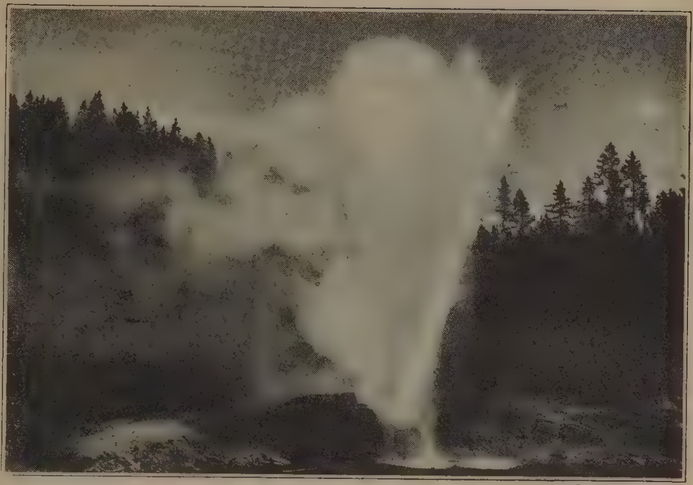


Figure 420. A diagram showing the ground water table and two kinds of wells. B, C, and D are common wells. Why must well D be deeper than well B? A is an artesian well located in a region of very light rainfall. It taps a porous, water-filled layer of rock lying beneath an impervious layer of rock. Why does water rise in well A without pumping? Why is pumping necessary in order to obtain water from wells B, C, and D?

Springs. Since there is water almost everywhere underground in regions of moderate or heavy rainfall, some of the water finds its way to the surface through cracks and crevices, especially on hillsides. Where water comes out of the ground in this way we have springs. If the spring water has a considerable amount of mineral matter in solution, we call it a *mineral spring*; and if the mineral substances are thought to be especially healthful, we call the spring a *medicinal spring.*



© Haynes, St. Paul

Figure 421. Riverside Geyser in Yellowstone National Park. This geyser erupts for fifteen minutes once in every six or seven hours, sending hot water and steam nearly a hundred feet into the air.

Hot springs. When the waters in the ground pass near heated rocks or come from very great depths where there is much heat, they may reach the surface as springs of hot water. In Yellowstone National Park and at a few other places in our country most of the springs are hot. Many are so hot that to fall into one of them means death.

Geysers. There are many hot springs in Yellowstone National Park which erupt, spouting hot water and steam high into the air like great fountains. Some erupt at regular intervals, like "Old Faithful," which breaks forth as a beautiful natural fountain once in every sixty to eighty minutes, sending its waters a hundred and twenty feet or more into the air. Some erupt every few minutes, others every few hours, and still others but once in several days. These hot springs that erupt are called *geysers. See Figure 421.*

The heat of the geysers is due to hot rocks deep beneath the surface of the ground. The eruptions are caused by the sudden formation of steam somewhere below the surface in cracks or crevices where the water has collected. When the steam is formed, it expands with great force, as in an explosion, and blows the water that is above it high into the air.

The Uses of Ground Water

Water for plant growth. Since trees and plants must obtain moisture through their roots, all the plant life on the earth depends on water in the ground. The water used in this way is that which does not sink below the subsoil, for even the longest roots of trees and plants do not go very deep into the earth, and they cannot force their way into the hard rock beneath the subsoil. Except where the soils are watered by irrigation, all the moisture obtained by the roots of plants and trees comes from the rain water that sinks into the ground.

The uses of well water. On large numbers of farms in our country, and in many towns and villages, the water used by the people and for the live stock comes from wells. This is true not only in the drier regions but also in the regions of abundant rainfall, for the ground water provides a more dependable supply than can be obtained by collecting rain water in cisterns, and, usually, a purer supply than can be obtained from rivers, lakes, or ponds.

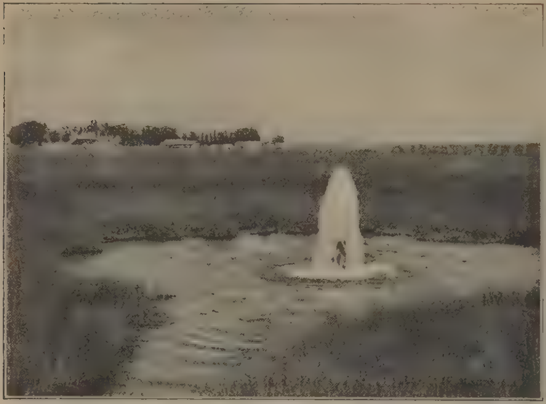


Figure 422. An artesian well on a farm in the Great Plains. Water obtained from this well without pumping is used in the house and for irrigation.

In the semiarid regions, where the rainfall is not sufficient to supply the needs of people, crops, or live stock, the ground water is of even greater importance. By sinking wells deep into the ground the people of such regions can make use of water which has fallen as rain hundreds of miles away. Certain parts of our Great Plains and our Western plateaus owe their population largely to the fact that water can be obtained from deep wells for home use, for watering live stock, and for irrigating crops. *See Figure 422.*

How ground water feeds streams, lakes, and ponds. Many lakes and ponds are fed partly by springs of water from the ground, and thus ground water contributes toward the uses which are made of these bodies of surface water.

In places where streams cut their valleys below the level of the ground water table, they receive water by *seepage*, or slow oozing, from the water-bearing rock layers that are exposed along their banks. The total amount of water received by rivers in this way is very large, and it helps greatly in keeping up their steady flow. In this way ground water contributes to all the valuable uses which are made of rivers.

Giving definitions. 1. The upper level of the underground water is called the ground water table.

2. A hole dug or drilled to obtain water from the ground is called a well.

3. A deep well from which water is obtained without pumping is called an artesian well.

4. A layer of rock through which water cannot pass is said to be impervious.

5. Waters issuing from the ground through cracks or crevices are called springs.

6. Hot springs that erupt with explosive force are called geysers.

Some things to explain. 1. There is water in the ground in all regions of moderate or heavy rainfall because seeps into ground.

2. There is water deep in the ground in many arid and semiarid regions because ----------.

3. The level of the ground water table often varies from season to season because ----------.

4. Water from beneath the surface of the land may be obtained by ----------------.

5. Water comes out of an artesian well without being pumped because ----------------.

6. The eruption of a geyser is caused by ------------------------------------.

7. Ground water is an exceedingly valuable resource because ----------------------.

Committee work. 1. If there are any wells in the vicinity of your school or home, find out how deep they are, and whether the water in them remains at the same level during the year. Report to your class on this subject.

2. If you live in a large city, find out where your water supply comes from, and what means are taken to insure its purity. Make a report on this subject.

3. If your school is in a region of artesian wells, find out how deep they are, and what their "flow" per minute is. Report to your class on this subject.

Special credit work. Find out how underground water makes caves in regions of limestone rock, and how the wonderful *stalactites* and *stalagmites* in limestone caves are formed. Write a paper to read to your class on this subject.

2. THE METALS

Much of the wonderful progress which has been made in agriculture, manufacturing, transportation and communication in the last hundred years would have been impossible without the use of the metals that we obtain from the earth. How many different metals can you name? What ones do you think are most useful?

Mineral veins and ores. At places below the surface of the ground there are cracks in the rocks filled with mineral matter, and in some of these cracks there are valuable metals such as iron, copper, or gold. We call such a filled-in crack a *mineral vein.* Rock containing enough mineral matter so that it can be mined and sold at a profit is called *ore. See Figure 423.*

Hunting for ores. The men who go out hunting for ores are called prospectors. They search in stream beds, on hillsides, and on mountain slopes for rocks which contain iron, copper, lead, zinc, gold, silver, or some of the rarer metals. When they find a piece that looks valuable, they hunt for the place that it came from. Now and then discoveries of very rich ores are made, and these keep the prospectors hopeful, leading them on day after day and month after month in their search.

Committee work. 1. Make a collection of pictures showing prospectors, mines, mining towns, and smelting plants for exhibition to the rest of the class.

2. Make a collection of common metals and, if possible, metal ores. Label the samples and arrange them as an exhibit.

3. If there is a mine near your home, try to get permission to visit it. Make a report to the rest of the class on what you see there. If you can obtain a map or plan of the mine, it will make your report more interesting.

Iron. Iron is the most important of all our metal resources. It is not the highest-priced metal, but because of its abundance and its great usefulness it ranks first in importance. There is a little iron in most of the soils and rocks and in most of the ground waters, and the red and yellow colors so often seen in rocks and soils are usually due to the presence of iron. In many places near the surface of the earth there are large deposits of rock material containing iron. Such rock material, if it contains enough iron to be mined at a profit, is called iron ore.

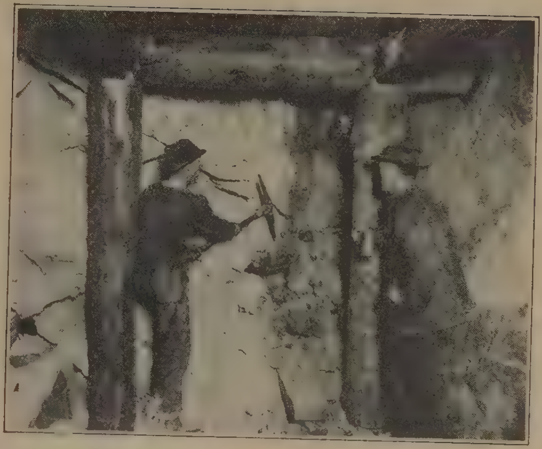


Figure 423. A view in a copper mine at Butte, Montana. The darker rock at the right of the miner's pick is copper ore. The lighter rock is worthless.

The Lake Superior iron ores. The region of our country which produces by far the largest quantities of iron ore is near Lake Superior. The iron ore of that region is of high grade, and since it is near the surface it can be mined easily and cheaply. When we speak of high-grade ore we mean ore which contains a large percentage of a valuable mineral. A low-grade ore may be valuable, but a ton of such ore contains a much smaller percentage of the mineral than does a ton of high-grade ore.

In the Lake Superior region the iron ore lies under a covering of glacial soils and subsoils. After this covering has been removed, the ore is taken out by steam shovels, just as great excavations are made. From the mines

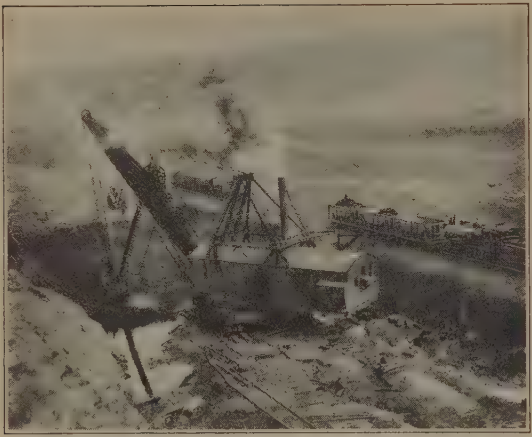
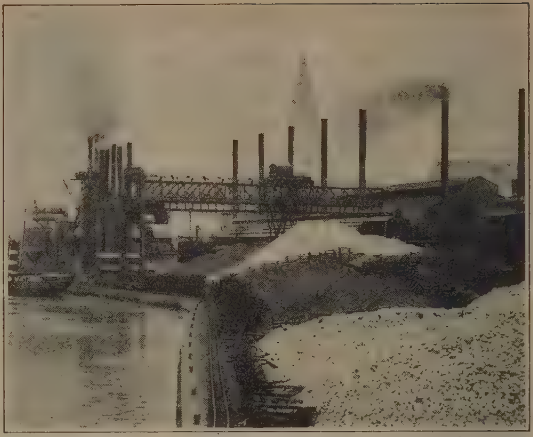


Figure 424. Mining iron ore by steam shovel in northeastern Minnesota. At the right are some of the cars which carry the ore to ports on Lake Superior.



Photograph by Ewing Galloway, N.Y.

Figure 425. Piles of iron ore and limestone at Cleveland, Ohio. The big steamer disappearing at the left has just unloaded a cargo of ore from Minnesota.

the ore is carried by rail to ports on Lake Superior and shipped to the leading industrial centers farther down the Great Lakes. *See Figures 424 and 425.*

Large quantities of the iron ore shipped down the lakes go to Chicago and Gary, at the southern end of Lake Michigan, to Detroit, to Cleveland and other lake ports of Ohio, to Erie, Pennsylvania, and to Buffalo, New York. From the ports on Lake Erie large quantities are reshipped by rail to the Youngstown and Pittsburgh iron-and-steel manufacturing districts and to other industrial districts farther east.

At each of the lake ports where iron ore is received there are blast furnaces for smelting the ore and making pig iron, and at many of them there are large steel mills. At Gary, Indiana, a great steel-manufacturing company has built the largest steel mills in the world. At Duluth, Minnesota, and Superior, Wisconsin, the two ports from which the largest quantities of iron ore are shipped, there are blast furnaces which turn out large quantities of pig iron.

The Appalachian iron fields. Next in importance to the Lake Superior iron fields are those in the Appalachian Highlands. There iron ores have been found in several places from New York State to northern Alabama. Large iron-and-steel plants were first established at Pittsburgh; and as the better ores of that district were exhausted, larger and larger quantities of ore were brought from the Lake Superior region. The Pittsburgh district is still the leader in the production of iron and steel; but the cities on the Great Lakes, where iron ore can be obtained somewhat more cheaply, are increasing their production very rapidly. Pittsburgh, however, has the advantage of being nearest to the best supplies of coal for making the coke which is necessary for smelting iron ore.

In the vicinity of Birmingham, Alabama, iron ore, good coking coal, and limestone (which is also needed in smelting iron ore) are found close together. This is a great advantage, for it means that the three principal materials used in making iron and steel can be brought together without heavy transportation expense. The Birmingham region is the center of the iron-and-steel industry of the South, and is likely to become a strong rival of the Pittsburgh district.

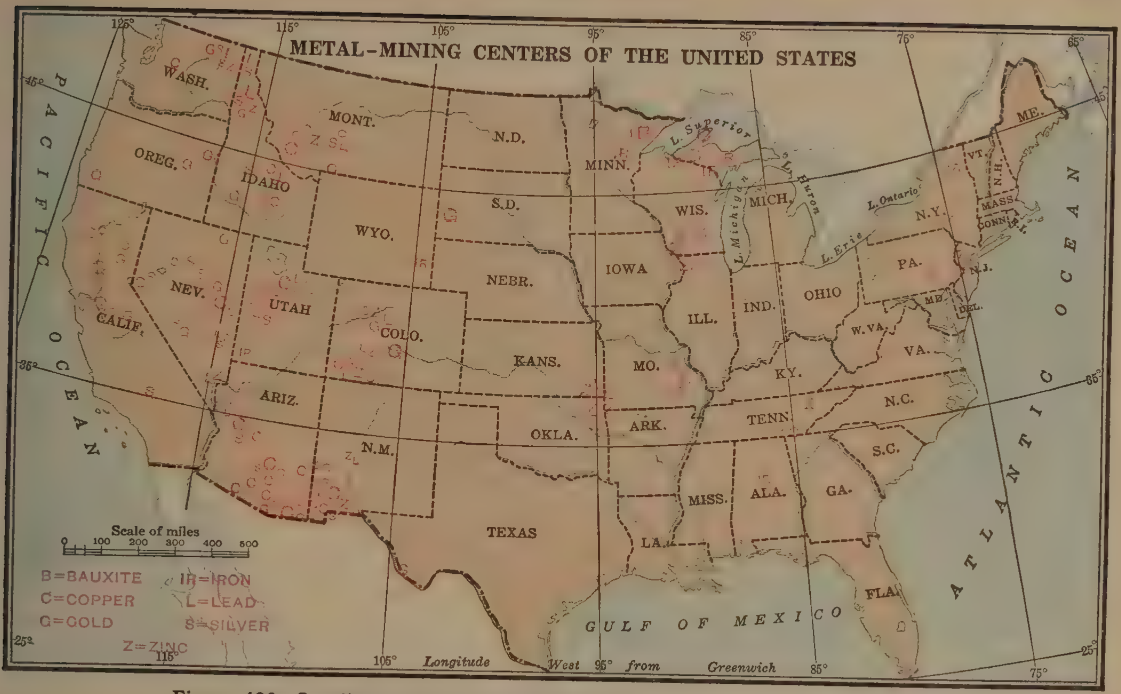

METAL-MINING CENTERS OF THE UNITED STATES
WASH.
MONT.
N.D.
MINN.
L. Superior
OREG.
IDAHO
S.D.
WYO.
WIS.
MICH.
L. Michigan
L. Huron
L. Ontario
N.Y.
VT.
N.H.
ME.
MASS.
CONN.
NEV.
UTAH
COLO.
NEBR.
IOWA
ILL.
IND.
OHIO
L. Erie
PA.
N.J.
MD.
DEL.
W.VA.
VA.
CALIF.
KANS.
MO.
KY.
ARIZ.
N.M.
OKLA.
ARK.
TENN.
N.C.
S.C.
MISS.
ALA.
GA.
TEXAS
LA.
FLA.
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
Scale of miles
0 100 200 300 400 500
B=BAUXITE
C=COPPER
G=GOLD
IR=IRON
L=LEAD
S=SILVER
Z=ZINC
Longitude West from Greenwich
125° 115° 105° 95° 85° 75° 65°
45° 35° 25°

Figure 426. Leading centers of production of metal ores in the United States.

Our rank among the iron-mining countries. Study Figure 426 and see what other iron fields you can discover besides those of the Lake Superior region and those of the Birmingham region. Then turn to Table 15 on page 514 and name the five states that lead in the mining of iron ore. How do the figures given in the table prove the importance of the Lake Superior district and the Birmingham district?

Our resources of iron ore are greater than those of any other country, and we produce more than two fifths of all the iron ore mined in the world each year. In fact, the state of Minnesota alone produces each year nearly as much iron ore as France, the country which ranks second in iron-mining.

Our imports of iron ore. Although most of the iron ore which we use is mined in our own country, we import over two million tons a year. One reason for this is that certain kinds of foreign ores are needed for mixing with our own ores in making special qualities of steel for special purposes. Another reason is that one of our great steel companies owns iron mines in Chile, and it is from that country that we import the largest quantities of iron ore. We import iron ore also from our neighbors, Cuba and Canada, and from Sweden and Spain.

Our rank in iron-and-steel production. The United States ranks first and Germany ranks second in the production of iron and steel, and together the two countries produce more than half the world's supply of these products. The other two large producers are Great Britain and France. All four countries produce iron and coal, but the United States is the one which is best supplied with the raw material and the fuel for the iron-and-steel industry. Germany and Great Britain have to import large quantities of iron ore, and France has to import large quantities of coal.

In addition to iron and coal, the iron and steel industries require many laborers, much capital, or money, good transportation facilities, and large markets. Deposits of iron ore are widely distributed through the world, but only a few countries have the combination of all the advantages necessary for developing the iron and steel industries on a large scale.

Our exports of iron and steel products. Steel rails for railroads, structural steel for bridges and buildings, farming machinery, manufacturing machinery, automobiles, tractors, and hundreds of other products made wholly or partly of iron and steel and manufactured in our mills and factories are used in many distant parts of the world. Our exports of these products amount to many hundreds of millions of dollars a year, and our trade in them is world-wide.

Some graphs to make. 1. Using the figures given on Table 14 on page 514, make a graph showing the quantity of iron ore mined in each of the ten leading iron-mining countries of the world.

2. Using the figures given in Table 15 on page 514, make a graph showing the quantity of iron ore mined in each of the nine leading iron-mining states of our country.

Copper. Copper, like iron, is one of the most useful metals, and the United States produces far more of it than any other country. Turn to Table 17 (p. 514) and name the five leading copper-producing states. Then find the copper-mining districts on Figure 426.

The mines in the upper peninsula of Michigan were for many years the greatest producers of copper in the world. Some of these mines are a mile deep, and the copper is not yet exhausted. After a time the mines at Butte, Montana, surpassed the Michigan mines in copper production, and then the mines of Arizona took first place. Today Arizona alone produces over 40 per cent of our yearly output of copper. *See Figure 427.*

The uses of copper. At present the most important use of copper is in electrical work, for copper wire has proved to be especially well fitted for conducting, or carrying, currents of electricity. In this country alone hundreds of thousands of miles of copper wire are needed to carry the electricity which is used for heat, light, and power, and for sending telephone and telegraph messages. Much copper is also used for making coins such as our pennies, and for the manufacture of plumbing pipes, plates for printing and engraving, screens, kettles, and many other useful products.

Our exports of copper. We produce so much copper that we have a large surplus for export. Most of our exports consist of bars of refined copper ready for use in the manufacture of copper products, but we also export copper wire and rods and other copper manufactures.

In the Rocky Mountains and the Western plateaus the copper is commonly found in ores which also contain silver, lead, zinc, and sometimes gold. In smelting, all the different metals that occur in sufficient quantities to warrant it are separated from the ores. Thus Butte, which is first and foremost a copper-mining district, also produces zinc, lead, silver, and gold.

There are rich supplies of copper in Alaska, and several million dollars' worth of copper are shipped from there to the Western States each year.

Our imports of copper ore. Although we mine more copper than any other country, we also import large quantities of copper ore. The ore comes largely from Chile, Canada, Africa, Mexico, and Peru. It is brought to this country chiefly because of the abundant coal which we have for extracting the metal from the ore. The cost of importing the ore is usually rather small, for many of the ships returning to the United States from the copper-exporting countries find it difficult to secure full cargoes, and so they charge low freight rates on the copper ore.

More graphs to make. 1. Using the figures given in Table 16 on page 514, make a graph to show the quantity of copper produced in each of the countries listed.

2. Using the figures in Table 17 on page 514, make a graph to show the quantity of copper produced in the nine leading copper-mining states and in Alaska.

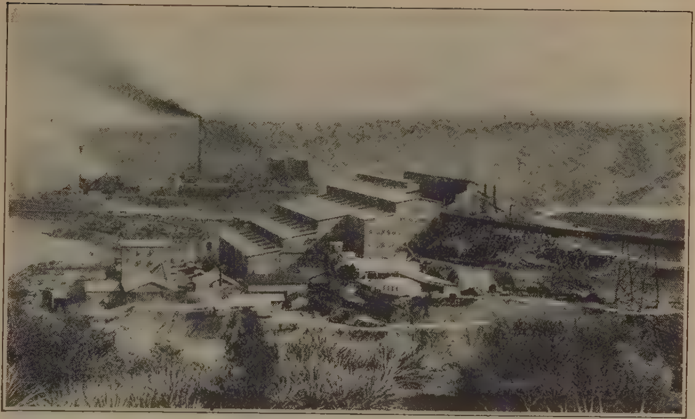


Figure 427. An ore-concentrating plant in a copper-mining district in Arizona. In this building copper ores from the mines are treated to separate the valuable portions from the useless portions.

Lead and zinc. Lead and zinc are very useful and therefore very valuable metals. They are found deep in the earth in mineral veins, and often occur together. Turn to Figure 426 and find the mining centers that are located where the boundaries of Missouri, Oklahoma, and Kansas meet. These centers form one of the chief lead-and-zinc producing regions of our country. Find other places in the country where lead, zinc, or both are mined.

In the Rocky Mountain states the lead and zinc occur in ores which also contain copper, silver, and gold. All these metals must be separated and purified for use. Ores of lead and zinc usually contain sulphur, and that makes it necessary to roast them to drive off the sulphur. The sulphur gas is captured and used in making sulphuric acid.

Missouri produces more lead than any other state, but Utah, Idaho, and Oklahoma also produce large quantities. Oklahoma is the leader in zinc production, followed by Kansas, Montana, and Utah.

The uses of lead and zinc. More than half the lead produced in the United States is used in the manufacture of paint. Zinc is also used in making paint, but its most common use is in the galvanizing of iron. The zinc covering keeps the air and moisture from reaching the iron and thus prevents it from rusting. Much zinc is also used with copper in making brass. How many other uses of lead and zinc can you name?

Aluminum. Aluminum is a very useful metal because it is light and strong, does not tarnish easily, and is a good conductor, or carrier, of electricity. It is obtained from an ore known as bauxite. France and the United States are the largest producers of bauxite. Our own supply comes largely from Arkansas.

As you probably know, many cooking utensils are made of aluminum. Because this metal is a good conductor, it is much used in electrical work, and because of its lightness and strength it is used in making the motors and framework for airplanes and dirigibles.

Gold and silver. The ores of gold and silver usually occur together, and they are often found with lead, zinc, and copper. Gold and silver are called precious metals; but as a matter of fact, we could do without them much more easily than we could do without iron, copper, lead, and zinc.

Most of the gold which we produce comes from states in the western part of the country and from Alaska. California leads in gold-mining, followed by South Dakota, where

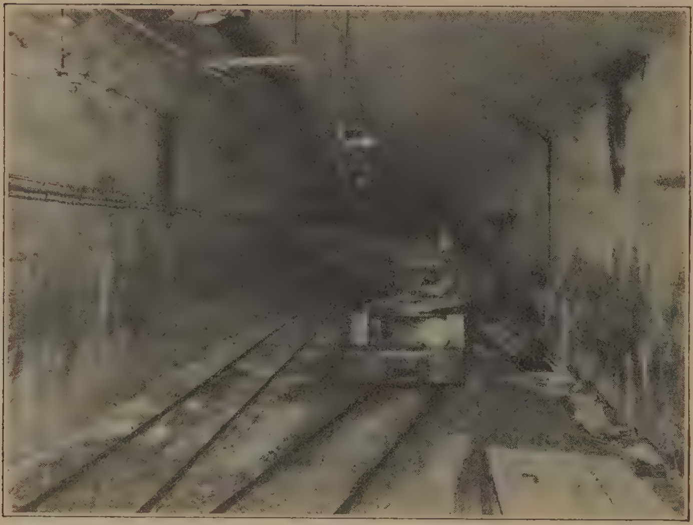


Figure 428. In a silver-lead mine in Idaho. The picture shows a train of cars loaded with silver-lead ore ready to start for the outside. The train is pulled by a small electric engine.

gold is mined in the Black Hills. Then come Alaska, Colorado, Arizona, Nevada, and Utah.

At Park City, Utah, large quantities of rich silver-lead ores are mined, and Utah leads all the states in the production of silver. Montana and Idaho also produce large quantities of silver. Next in order of production come Arizona, Nevada, and Colorado. Thus our silver, like our gold, comes largely from the Western States. *See Figure 428.*

The United States is second among the countries of the world in the production of silver. Mexico ranks first, Canada third, and Peru fourth. Thus the four leading silver-mining countries are all in the Western Hemisphere. The United States also ranks second in the production of gold, but its output each year is far less than that of South Africa, the leading gold-mining country. Canada ranks third in gold production.

The uses of gold and silver. The chief use of gold is for money. Our own country and various other countries put out many gold coins, and bars of gold that are stored in our national Treasury are represented by the bills that we call gold notes. Large quantities of gold are also used in making jewelry. Gold is a soft metal, and when it is to be used for jewelry a small amount of copper is often mixed with it. The copper gives greater hardness, and the combined metals last much longer than would the gold alone.

Silver is also used in large quantities for money. Our own dimes, quarters, and half-dollars are made of it, and many other countries issue silver coins. Much jewelry and tableware and many ornaments are made either of silver or of other metal plated, or covered, with silver.

The conservation of metals. When metal ores are taken from the earth, they are gone forever, for we cannot replace them in the ground as we can renew our forests and replant our farms with crops. For this reason metals should be used with care, and not wasted. In the United States our metal resources are very great, and there is no reason why we should not use them as much as we need to. But we should be careful to save the old pieces of discarded metal which can be melted and used over again. Very likely you have seen a "dump" where large quantities of "scrap iron" which have been discarded are rusting away. This is a great waste, and one that would not be allowed in a country where iron ore was scarce.

The use of zinc in galvanizing iron is an excellent conservation measure, for in this case a less valuable metal is being used to preserve a more valuable one. Many people feel that satisfactory substitutes should be found for lead in the manufacture of paint, for lead used for this purpose can never be used over again.

Graphs to make. You have already made graphs showing the production of iron ore and copper by states in this country. Make similar graphs for the production of lead, zinc, gold, and silver, using the figures given in Tables 18, 19, 20, and 21 on page 515.

Map work. Use the map on pages 330–331 or a wall map of the world to locate

1. The countries from which we import iron ore. Chile, Cuba, Canada, Sweden, Sp

2. The countries from which we import copper ore. Chile, Canda, Africa, Mexico, Peru

3. The country which ranks next to the United States in the production of iron ore. France

4. The four countries which lead in the manufacture of iron and steel. U.S. Germany France Great Bri

5. The country that leads in gold-mining. S. Africa

6. The four countries that lead in silver-mining. Mexico, U.S, Canada, Peru.

Sentences to complete. 1. A mine often produces more than one kind of metal because --.

2. Iron is the most important of all the metals because abundance, great usefulness.

3. Iron ore can be mined easily in the Lake Superior district because near surface---.

4. Pittsburgh is well located to manufacture iron and steel because ----------------------.

5. The ports on Lake Erie are well located to manufacture iron and steel because --.

6. The Birmingham district of the South has great advantages for iron-and-steel manufacturing because ----------------------.

7. The United States imports iron ore because ----------------------------------.

8. Builders, manufacturers, and farmers in many distant parts of the world are served by our iron-and-steel industry because ----------.

9. The United States is able to help to supply the world markets for copper because -----.

10. The United States imports copper ore because ----------------------------------.

11. The "precious" metals are less valuable to us than iron and copper because ----------.

12. Although our metal resources are very great, we should use them with care because --.

3. The Fuels

There would be no life of any kind on this earth if it were not for the light and heat from the sun. Since, however, people need artificial light at night, and, for many purposes, more heat than can be obtained directly from the sun, men have sought other sources of heat and light.

Long ago, before people knew about coal, petroleum, natural gas, or electricity, they burned for heat and light whatever fuels they could get most easily, and their only sources of power were their own strength and that of the animals which they used in their work. Even today, people in many parts of the world supply their needs of heat, light, and power in the simplest ways. For example, the Eskimos burn oil which they obtain from seals and other sea animals, and the natives of the Congo forest burn wood. In the more backward countries nearly all work is done by man power and animal power.

But in all the more progressive countries of the world heat, light, and power are now obtained largely through the use of fuels from the ground — coal, petroleum, and natural gas — and through the use of electricity. All modern industrial development is based on the use of these resources.

How do our fuel resources compare with those of other countries? Where are the coal fields and the oil and gas fields of our country? How do we use our fuel resources? What are we doing to conserve them? Watch for answers to these questions as you study this section.

Coal

"Solid sunbeams." Millions of years ago the rays of light and heat that came to the earth from the sun made possible the growth of trees and other plants just as they do today. At places where there were great swamps or marshes, the leaves, twigs, branches, and tree trunks that fell to the ground decayed and formed peat. If there had been any people living on the earth at that time, they might have used that material for fuel just as people use peat in many countries today.

This vegetable matter continued to accumulate through thousands of years. Then the land sank somewhat, and the sea water came in over the peat. Sands and muds from the lands, brought by the rivers, then buried the peat, or vegetable matter. The overlying cover of rock materials became hundreds, and at places thousands, of feet thick, for the land on which the forests had once grown sank deeper and deeper beneath the sea waters.

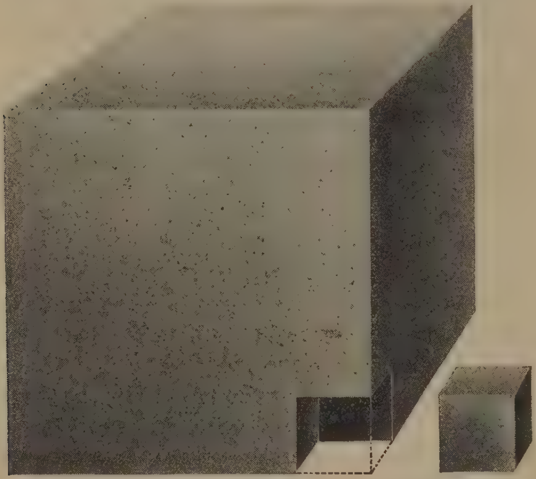


Figure 429. A diagram showing the extent to which we have used our coal resources. The large cube represents our original stock of coal in the ground; the small cube, the amount mined up to the present time.

As the thick layers of mud and sand pressed down on the peat, this buried vegetable matter was changed into lignite, which is a very poor grade of coal. As time went on and the pressure increased still more, the lignite hardened into what we call bituminous, or soft, coal. At a few places, where the pressure was greatest of all, the bituminous coal was changed into anthracite, or hard coal. Thus the energy, or power, in the sunbeams, which made possible the abundant growth of vegetation in the swamps of long ago has been preserved in the black, stony material which we call coal. For this reason it is appropriate to think of our coal resources as "solid sunbeams."

gnite

tu-minous

hracite

Our wealth of coal. The United States is exceedingly fortunate in having greater coal resources than any other country in the world. We have all varieties of coal — lignite, bituminous of varying grades, and anthracite. A great scientist has made the statement that if we should use as building material all the coal that we mine in a year, we could build four hundred pyramids larger than the largest pyramid of Egypt.

At present we are mining coal in the United States at an average rate of about 600 million tons a year, and the value of the coal mined each year is nearly $1,500,000,000. It is interesting for comparison to know that all the gold mined in the United States and Alaska each year is worth less than $50,000,000.

Commercial coal-mining in the United States began about a hundred years ago, and since that time we have taken more than 25 billion tons of coal from the earth. Our resources of coal are so great, however, that as yet we have used less than one per cent of what was originally in the ground. Figure 429 will help you to picture these facts.

Where are our coal supplies? Figure 430 will help you to answer this question. Notice that our coal fields may be divided into three groups: those of the Appalachian region of the East; those of the Central Plains; and those of the Western mountains and plateaus. Study carefully the distribution of the anthracite, bituminous, and lignite fields.

Of the three groups of coal fields, those of the Appalachian region are the most important, for they produce about seven tenths of all our coal. West Virginia produces more bituminous coal than any other state, but Pennsylvania, which has anthracite fields as well as bituminous fields, leads in the total amount of coal mined each year. Pennsylvania produces practically all the anthracite mined in the country.

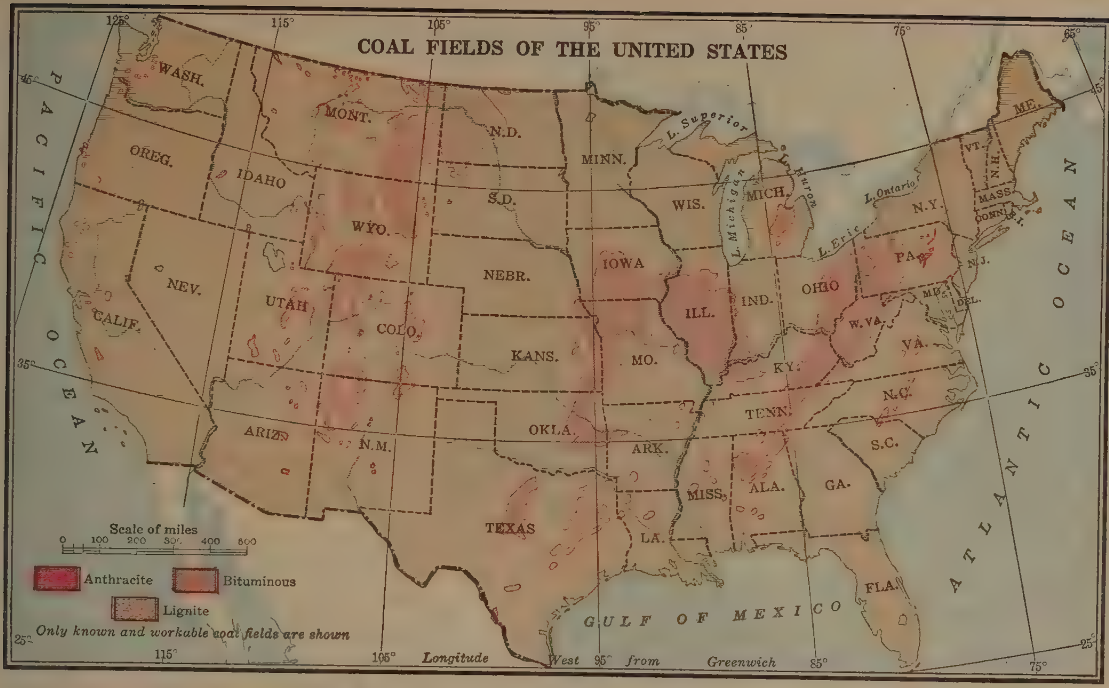

COAL FIELDS OF THE UNITED STATES
Scale of miles
0 100 200 300 400 500
Anthracite
Bituminous
Lignite
Only known and workable coal fields are shown
Longitude West from Greenwich
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
WASH.
OREG.
CALIF.
NEV.
IDAHO
MONT.
WYO.
UTAH
COLO.
ARIZ.
N.M.
N.D.
S.D.
NEBR.
KANS.
OKLA.
TEXAS
MINN.
IOWA
MO.
ARK.
LA.
WIS.
ILL.
MICH.
IND.
OHIO
KY.
TENN.
MISS.
ALA.
GA.
FLA.
S.C.
N.C.
VA.
W.VA.
PA.
N.Y.
N.J.
MD.
DEL.
VT.
N.H.
MASS.
CONN.
ME.
L. Superior
L. Michigan
L. Huron
L. Erie
L. Ontario

Figure 430. The coal fields of the United States.

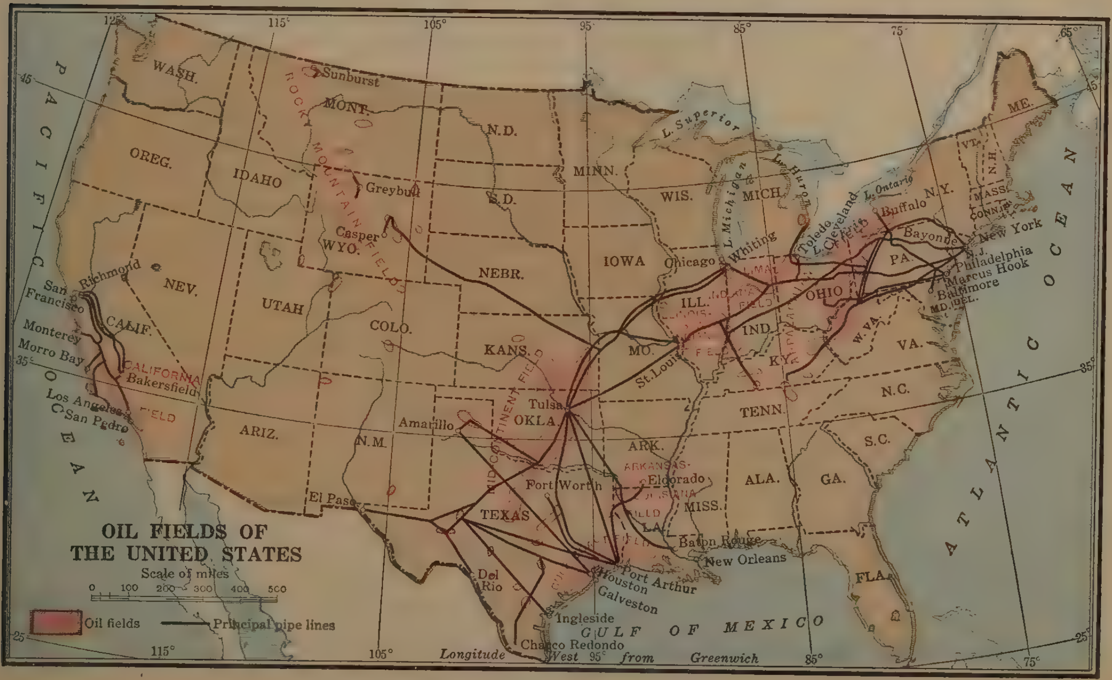
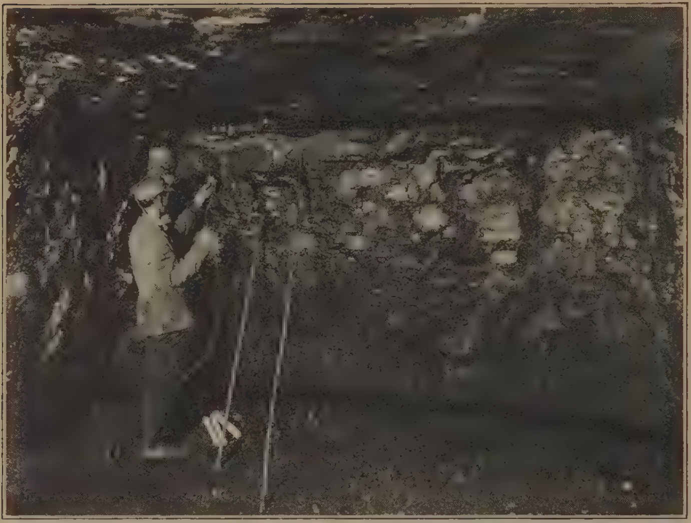

OIL FIELDS OF THE UNITED STATES
Scale of miles
0 100 200 300 400 500
Oil fields
Principal pipe lines
Longitude West from Greenwich
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
ROCKY MOUNTAIN FIELD
CALIFORNIA FIELD
MID-CONTINENT FIELD
ARKANSAS-LOUISIANA FIELD
ILLINOIS FIELD
INDIANA FIELD
LIMA FIELD
Sunburst
Greybull
Casper
Richmond
San Francisco
Monterey
Morro Bay
Bakersfield
Los Angeles
San Pedro
Amarillo
El Paso
Tulsa
Fort Worth
Eldorado
Del Rio
Houston
Galveston
Port Arthur
Ingleside
Chacco Redondo
Baton Rouge
New Orleans
St. Louis
Chicago
Whiting
Toledo
Cleveland
Buffalo
Bayonne
New York
Philadelphia
Marcus Hook
Baltimore

Figure 431. The oil fields of the United States.



Courtesy of Peabody Coal Company

Figure 432. A miner putting dynamite into a coal seam in a mine in Illinois. Dynamite is used to blast out the coal. Notice that the seam, or layer, of coal is thicker than the miner is tall.

The next most important fields are those in the Central Plains. The fields of Illinois, Indiana, and western Kentucky together produce about two tenths of our coal, and Illinois ranks fourth among the coal-mining states. Kentucky, which has a share of the Appalachian fields as well as a share of the Central fields, ranks third. The remaining one tenth of our coal comes from other parts of the Central fields and from the Western fields. Among the Western states Colorado leads in coal-mining. *See Figures 432 and 433.*

The uses of coal. In 1768 a Scotchman named James Watt invented the first successful steam engine. That was one of the world's greatest inventions, and the one which led to the use of the world's coal resources. As the steam engine was improved for use in manufacturing, in locomotives, and in steamships, coal came to be the chief fuel burned to generate the steam power. The first railroad locomotives used wood, but coal was soon found to be a better and more convenient fuel for this purpose. As more coal was mined, people began to use it for heating houses and public buildings, first for hot-air heating, and later for steam and hot-water heating.

When men learned how to extract in large quantities the gas that is stored in coal, gaslight came into use, and later gas obtained from coal came into common use for cooking and heating. Today electricity has largely displaced gaslight, but much of the electricity used not only for light but for heat and power is generated with the use of coal.

Today the principal use of bituminous coal in our country is as a source of power for industrial plants and railroads, and the chief use of anthracite is for heating purposes. Large quantities of certain kinds of bituminous coal are used to manufacture coke for smelting iron ore. In coke manufacture the coal yields a large variety of by-products such as tar, oil, gas, and ammonia, and the by-products of a ton of coal used for coking are about as valuable as the coke itself.

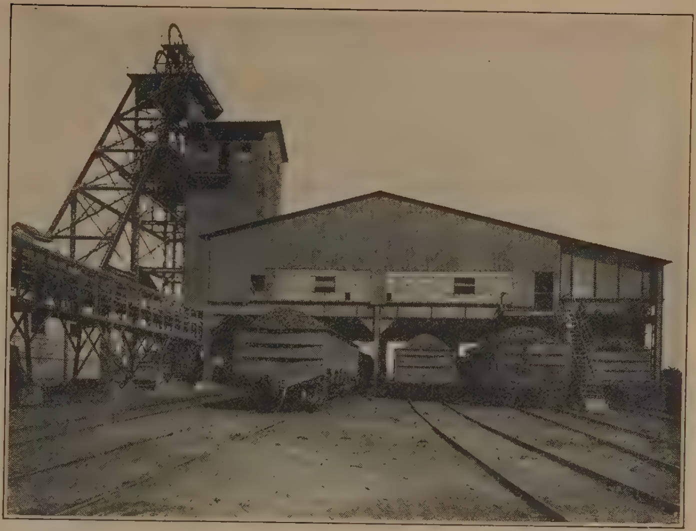
We have so much coal of good quality that we make very little use of our lignite. In time, however, when our better supplies of coal are more nearly exhausted, lignite may prove to be a valuable resource, for there are ways in which it may be treated to make good steam coal. The people of Germany are already using lignite for this purpose.

Foreign trade in coal. Turn to Table 24 on page 515 and name the countries to which we ship the most coal each year. Notice that Canada takes more than half the coal that we export and that much of the remainder goes to other countries in the Western Hemisphere. What reason does Table 22 (p. 515) suggest for these facts? What industrial country of Europe buys large quantities of coal from us?

Does that country appear in Table 22? What reason, then, can you give for its coal trade with the United States?

Conservation of coal. Although we have enormous coal resources, we are rapidly using up the better coal that is near enough to the surface to be mined economically. There are several ways in which we can make our supplies of good coal last longer:

1. Prevent waste and loss in mining. It is estimated that for many years as much coal was wasted or lost in mining as was used. That was a tremendous and a disgraceful loss. In up-to-date mines better mining methods are now reducing this loss.



Courtesy of Peabody Coal Company

Figure 433. A coal tipple in Illinois. The coal, hoisted from the mine in small cars, passes through the building called the tipple, where it is sorted by machinery and then dumped into freight cars.

2. Use the coal dust. Little bricks, called *briquets*, can be made by using tar to bind together coal dust and small bits of coal. Such briquets make good fuel for some purposes.

3. Improve methods of burning coal so as to get more heat from each pound. This calls for the invention and use of better kinds of engines, furnaces, and stoves. At present much heat goes up the chimneys and smokestacks, and is wasted.

4. Use coal carefully. It is estimated that if every person in the United States who uses coal should save one shovelful of coal out of ten, about 50 million tons could be saved each year.

Committee work. 1. Make a collection of the different kinds of coal. Label and arrange the specimens in an exhibit.

2. Make a collection of pictures illustrating the mining, transportation, and uses of coal. Mount and label the pictures for exhibition.

3. Find out where the coal used in your town, city, or county comes from. Then make a map which will show your classmates the routes over which the coal travels from the mines to your town, city, or county.

Some graphs to make. 1. Make a graph showing the production of coal in each of the ten countries which lead in coal-mining. Use the figures given in Table 22 on page 515.

2. Make a graph showing the production of coal in each of the ten states of our country which lead in coal-mining. Use the figures in Table 23 on page 515.

Questions based on the graphs. 1. What country leads the world in coal production? 2. In what two continents are the other leading coal-producing countries located? 3. What statements can you make about the industrial development in those countries?

4. Among the states of our country which lead in coal-mining, which ones produce coal from the Appalachian fields? from the interior fields? 5. Which two are Rocky Mountain states?

Some things to explain. Explain why (1) we sometimes speak of coal as "solid sunbeams"; (2) we do not make much use of our lignite; (3) we should not waste our coal.

Petroleum and Natural Gas

How petroleum and natural gas are obtained. As you doubtless know, we obtain petroleum and natural gas by drilling wells which tap the rock layers deep in the ground in which these mineral fuels are imprisoned. Petroleum and natural gas are usually found together in the earth, and with them there is often some salt water. The gas is the lightest and nearest the surface; then comes the oil, or petroleum, and below the oil is the salt water. When a well is drilled, gas frequently comes out first, then oil, and later salt water.

How were the petroleum and natural gas formed? We do not know just how petroleum and natural gas were formed, but most scientists agree that they must have come from vegetable or animal matter that was buried deep in the earth.

We know that the process of making the oils and gases went on deep in the earth where the pressure was great and the temperature higher than it was at the surface. The process must have taken a very long time, probably millions of years. More oil and gas may be forming today; but we are using up these valuable resources much faster than they are being formed, and they are resources which, once used, are gone forever.

Where we obtain our petroleum and natural gas. The United States produces more than two thirds of all the world's petroleum each year, or more than twice as much as all the other oil-producing countries combined. Figure 431 shows the distribution of our oil fields. Study the map carefully.

The first discoveries of oil in our country were made in western Pennsylvania, and the first oil well was drilled there in 1859. The Appalachian oil field extends southward from western Pennsylvania through West Virginia and eastern Kentucky, and northward into southern New York. That field, which was the first important producer, now yields but small quantities of oil compared with the newer fields west of the Mississippi. The same is true of the fields of Ohio, Indiana, and Illinois.

Our most important oil field today is the one known as the mid-continent field, which extends from north-central Texas through Oklahoma into southeastern Kansas. Wonderful discoveries of oil have been made in this field in the last fifteen years, and at present it is producing about 60 per cent of all our oil.

Other oil fields are found along the Gulf coast of Texas, in Louisiana and Arkansas, and in the Rocky Mountain states. Of far greater importance are the oil fields of California, which produce about 26 per cent of our petroleum today. *See Figure 434.*

Many of the oil fields also produce natural gas. Especially large quantities are obtained in Oklahoma and Texas in the mid-continent field, in West Virginia in the Appalachian field, and in California.

The transportation of oil and gas. Pipe lines, laid beneath the surface of the ground, carry natural gas and oil from the producing fields to the places where they are used. Most of the crude oil, or the petroleum as it comes from the ground, is pumped through pipe lines to refineries where it is treated in such a way that it is made to yield gasoline, kerosene, and other light oils, fuel oil, and other useful products. Figure 431 shows the main pipe lines.

The uses of petroleum and natural gas. Much fuel oil is burned for heating houses and public buildings, and in some parts of the country where coal is not abundant the railroads use oil-burning locomotives. Many ocean liners and naval vessels are equipped with oil-burning engines. Most lubricating oils come from petroleum; and since such oils are necessary for oiling machinery, our manufacturing industries depend to a large extent on our petroleum resources.

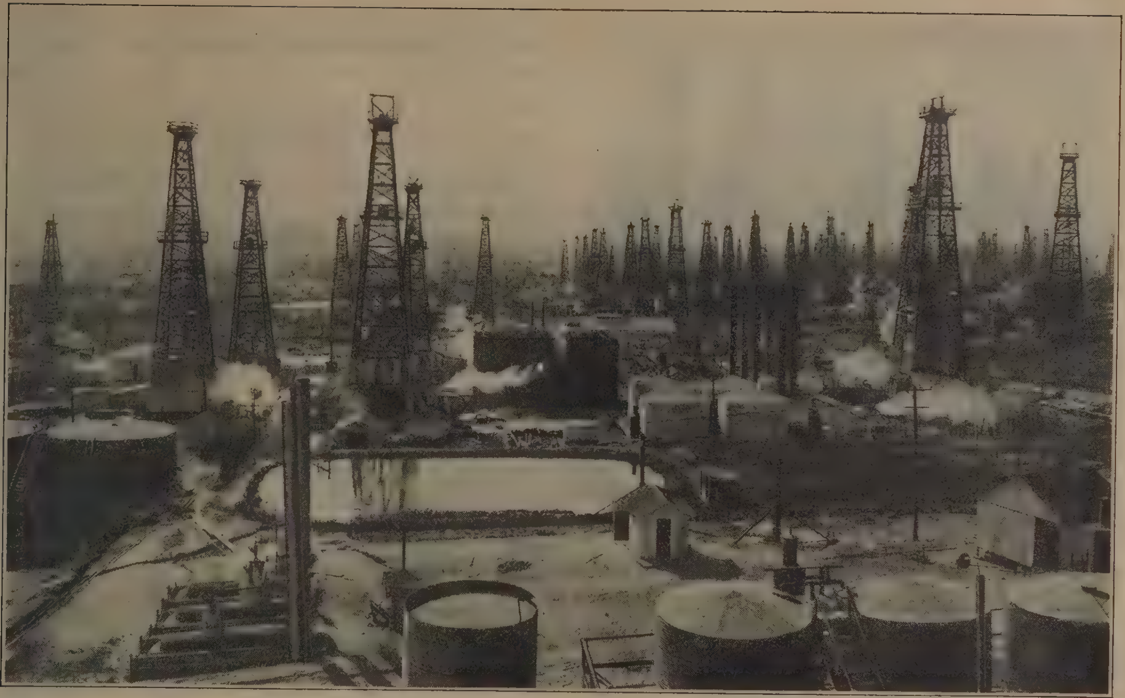


Figure 434. A view of part of a rich oil field not far from Los Angeles. The tall framework towers are oil derricks, built to support the drilling tools when the wells were driven. The round steel tanks are for the storage of oil. Turn to Table 25 on page 516 and find out California's rank among the oil-producing states.

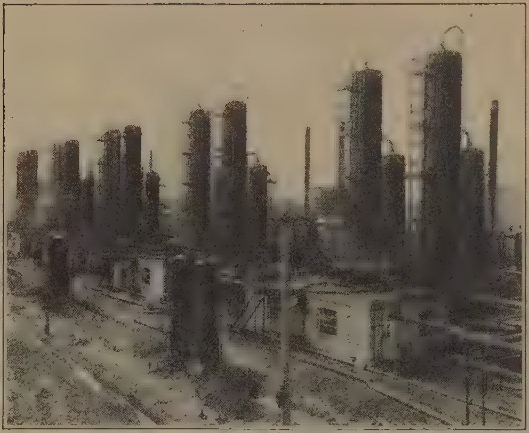
The most important of the lighter oils obtained from petroleum by refining are gasoline and kerosene. Kerosene is used chiefly for lighting purposes. Gasoline is essential to the newer forms of transportation, for it is used to drive automobiles, motor trucks, motor boats, submarines, and airplanes. Naphtha, benzine, paraffin, and vaseline are other useful petroleum products.

Natural gas is the most easily used of all the natural fuels. Many people who live near the producing fields use it in their houses for lighting, heating, and cooking, and certain kinds of industrial plants also make use of it. Among these plants are many glass factories located near the Appalachian gas fields.

Our exports of petroleum products. Since we produce so much of the world's petroleum, it is natural that we should supply many other countries of the world with petroleum products. Such products are among our leading exports, and they include gasoline, kerosene, fuel oil, lubricating oils and greases, and paraffin wax. Although kerosene is not the most valuable of our exports of petroleum products, it is by far the most widely distributed, for it is the oil used most commonly throughout the world for light. American kerosene goes to almost every country, including Greenland and places in the interior of China where few white men have ever gone.

You will find it interesting to study Table 26 on page 516 and see what countries buy the largest quantities of our exports of petroleum products.

Conservation of petroleum and natural gas. Fortunately, as fast as our older fields of oil and natural gas have neared exhaustion,



Courtesy of Chamber of Commerce, Beaumont, Texas

Figure 435. An oil refinery at Beaumont, Texas. The tall steel towers are "stills" in which crude petroleum is treated to obtain the lighter oils from it.

new fields have been discovered, and we have been able to increase our production of these fuels from year to year. But since there is only so much oil and gas in the ground, this cannot go on forever, and therefore it is important for us to conserve these resources.

In the past many oil and gas producers have wasted large quantities of these fuels by letting the gas burn or escape into the air, and by allowing the oil to run away or be lost by evaporation from open tanks. Some are guilty of such waste at the present time, but much improvement has been made. Scientists have made wonderful progress in developing processes for getting larger quantities of the more valuable products in the refining of petroleum, thus saving much of the waste of earlier refining methods. *See Figure 435.*

Questions for class discussion. 1. What difference would it make to us if we were suddenly forced to stop using petroleum products? 2. What difference would it make to other countries if our production of petroleum should drop to the point where we had no surplus for export? 3. In what ways does an automobile owner depend on petroleum products? 4. In what ways do manufacturers depend on such products?

A graph to make. Use the figures in Table 25 (p. 516) to make a graph showing the amount of petroleum obtained yearly in each of the ten leading petroleum-producing states. Then locate the ten states on Figure 431.

Special credit work. 1. Find out how an oil well is drilled and tell your class about it.

2. If you live near an oil field, find out about how deep the wells are, and about how many gallons of oil they produce per day.

4. Other Mineral Resources

Among the many mineral resources which we use in large quantities are salt and various kinds of rocks. Do you know how we obtain salt? Can you name some rocks which are useful as building materials? Can you name any other uses of rock and rock materials?

Common salt. All people and all animals need a certain amount of salt in their diet, and for that reason salt is sometimes classed as a food. Common salt is used in every home in our country and in many of the industries, and therefore the amount used is very great. The amount produced annually in the United States averages about 7,500,000 short tons. A short ton is 2000 pounds. What is the average annual production of salt in pounds?

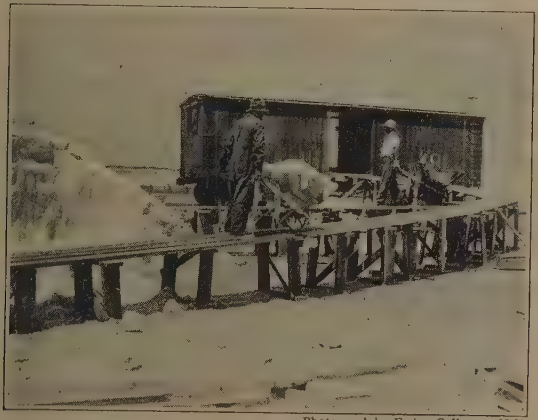
How salt is obtained. Dissolved in every 100 pounds of the water of Great Salt Lake in Utah are about 20 pounds of salt. Near the lake are places where the water is pumped into fields surrounded by banks, or dikes. As the water evaporates, the salt is left behind, forming a crust of white crystals. The salt is then plowed up and sent to refineries. In this way large quantities of salt are "harvested" near Great Salt Lake every few weeks. *See Figure 436.*

Some of our salt comes from sea water. At places about the margin of San Francisco Bay there are ponds covering thousands of acres where sea water is allowed to come in at high tide. The gates are then closed and the water allowed to stand until it evaporates, leaving the salt behind. In some places sea water is led into buildings where artificial heat is used to evaporate it.

Much of our salt comes from great layers of salt deep in the ground. These layers, now so far below the surface, were formed on the surface long ago, when the water of inland seas like Great Salt Lake evaporated. The layers of salt were then buried under layers of rock material. Some of this buried salt is mined, but much more is obtained by forcing hot water down into it. The hot water dissolves the salt, and the brine, or salt water, is then pumped to the surface and evaporated.

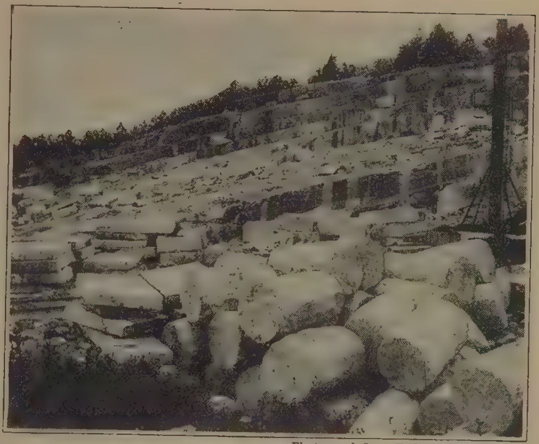
Much more of our salt comes from beneath the ground than from the evaporation of sea waters and salt-lake waters. Salt is found in many of the states, but more than seven tenths of all that we produce comes from Michigan, New York, and Ohio.

Common rocks. Beneath the soils and subsoils everywhere on the earth there are solid rocks. In some places loose rock materials on the surface are so thick that no one has ever seen the underlying rock. At other places the soil and subsoil are thin, and at some places there is no soil at all. Where soil is lacking or thin, men can quarry the solid rock easily. Many of the common rocks make excellent building stones, and some of the loose rock materials can be used for manufacturing building materials.



Photograph by Ewing Galloway, N.Y.

Figure 436. Loading raw salt at Great Salt Lake in Utah. How does the climate favor the evaporation of salt water in the open air at Great Salt Lake?



Photograph from Ewing Galloway, N.Y.

Figure 437. A granite quarry in New England. The roughly rounded granite blocks will be smoothed and used for columns for public buildings.

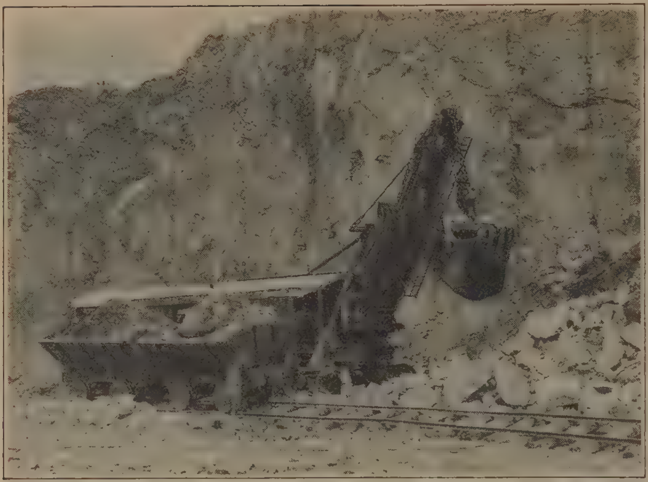
Building stones. Granite, limestone, sandstone, and marble are the chief rocks which are quarried for building stones. Do you know of any buildings made of these stones?

The various kinds of granite are widely used for building stone because they are attractive and wear well. They are so hard that they take a good polish, and for that reason they are often used for columns in public buildings and for monuments. New England furnishes much of the granite used for buildings and monuments in this country. Other important sources of supply are the southern division of the Appalachian Highlands from Pennsylvania to Georgia, and the Laurentian Upland region of Minnesota and Wisconsin. In the West, California is the leading state in granite production. *See Figure 437.*

Limestone is the kind of rock used in largest quantities for building purposes because it is attractive, durable, and somewhat more easily worked than granite. Indiana leads all the states in the quarrying of limestone for this purpose. Much less sandstone is used for buildings, chiefly because it is softer and does not wear so well.

Marble is one of the most beautiful of the building stones, and like granite it takes an excellent polish. Where marble is plentiful, it is often used for the construction of entire buildings, but elsewhere it is used chiefly for columns, trimmings, and monuments. Vermont produces more marble than any other state, followed by Tennessee and Georgia.

Other uses of common rocks. Large quantities of limestone are quarried for use in smelting iron ore and for use in making lime. Limestone is also the most important material used in making Portland cement. Portland cement is the gray, powderlike material which is mixed with crushed rock and sand to make concrete, one of our most important building and road materials. *See Figure 438.*



Courtesy of Portland Cement Association

Figure 438. Quarrying limestone in Pennsylvania for the making of Portland cement. The limestone rock is blasted out, and the steam shovel loads the cars with the fragments.

Much granite is used for paving blocks and street curbings. Sandstones also are used for curbings, and certain kinds are crushed to make sand for the manufacture of glass. Many different kinds of rocks are quarried and crushed for use as road-building material.

Slate is another very useful rock. Anyone who goes to school can think of at least one use of this material. Another important use of slate is for roofing buildings. Slate shingles last longer than wooden shingles, and they have the advantage of being fireproof. Pennsylvania and Vermont are the largest producers of slate.

Phosphate rock. We are fortunate in having in this country large quantities of phosphate rock, which is very valuable as fertilizer. It is found both in the East and in the West, but by far the largest quantities are quarried in Florida. Much phosphate rock, finely ground, is sold to farmers to spread on their fields, and even larger quantities are used with other materials in the manufacture of fertilizers.

Sands, gravels, and clays. In many parts of our country there are large deposits of these loose rock materials. Certain of the sand deposits are suitable for making glass, and are called glass sands. Much sand is also used in making concrete. The gravel deposits are drawn upon in large quantities for road-building materials.

In many places there are large deposits of clay which can be used in making bricks and tile. In this country bricks are used for building more commonly than any other material except wood. Figure 439 shows how bricks are molded from clay. They are then baked, or fired, in large kilns, or ovens, until they are hard enough to withstand all kinds of weather. Different clays and different temperatures in firing make different kinds and colors of bricks.

Special credit work. Find out and tell your classmates

1. Why limestone is put into blast furnaces with iron ore and coke.
2. How sand is used to make glass.

Sentences to complete. 1. Salt can be obtained from the land and from the sea because --.

2. Granite and marble make handsome building stones because ----------------------.

3. Limestone contributes to our supply of building materials in two ways because ------ --.

4. Sandstone is less used for building purposes than limestone because --------------.

5. Slate makes excellent roofing material because ------------------------------------.

6. Brick manufacturers use ---- as their raw material, and glass manufacturers use -----.

7. Phosphate rock is very useful to farmers because --------------------------------.

Committee work. 1. If there is a quarry, clay pit, brickyard, sand and gravel pit, cement plant, or salt plant close by, where you will be safe and welcome, visit it and report to the rest of the class on the work done there.

2. Find out what kinds of rock are quarried in largest quantities in your state, and what they are used for. Make a full report to the class.

3. Try to obtain specimens of the various rocks and rock materials about which you have been studying. Arrange them for exhibition in your classroom.

Giving names. 1. Name the state that leads in the production of each of the following:

iron ore Minn
copper Ariz
lead Missouri
zinc Okla
gold Col.
silver Utah
bauxite Ark
phosphate Fla
marble Ver
petroleum
bituminous coal
anthracite coal Pa

2. Name (1) the leading iron-and-steel manufacturing district of the United States; (2) the leading iron-and-steel manufacturing district of the South. Pittsburgh Birmingham

3. Name the territory of our country which produces copper and gold. Alaska

4. Name (1) the leading coal-mining region of the United States; (2) the leading oil field of the United States. Applachian Region mid-Conti

5. Name (1) a lake which helps to supply us with salt; (2) the state which leads in quarrying limestone for building purposes.

Salt Lake
Indiana

Figure 439. A brick-making machine. Stiff clay is forced through troughs of the proper size and shape, and an electric machine cuts it into bricks.

A mineral-product test. Can you name each one of the mineral products described below?

1. A metal important in electrical work. co
2. The chief fuel used to generate steam. coal
3. A metal used for galvanizing iron. zinc
4. A mineral sometimes classed as a food. sa
5. The mineral product from which gasoline and kerosene are obtained. petroleum
6. The metal ore on which steel manufacturing depends. iron
7. Rock quarried for use in blast furnaces.
8. The ore from which aluminum is obtained. bauxite
9. A mineral product used extensively in paint manufacture. lead
10. An invisible fuel. [illegible]
11. Metals used for money and jewelry. sil
12. Building stones that take a high polish. m

Some things to explain. Explain

1. Why our supplies of underground water are a valuable resource.

2. Why the United States is well equipped to manufacture iron and steel.

3. Why we should not waste our fuel resources. In what ways can we conserve them?

4. Why we should not waste our metal resources. In what ways can we conserve them?

5. How our resources of rock materials may be used to conserve our timber supply.

VIII. OUR WEALTH OF WATER POWER

Foreword. The early settlers who came to this country from western Europe brought with them a knowledge of the use of water wheels. Therefore when they found streams with falls and rapids, both in New England and in the colonies farther south, they built mills and used the water power for various purposes.

The earliest mills were used chiefly to grind grain into flour and meal, and to saw logs into lumber. Later, when textile machinery was invented, cloth made in cotton and woolen mills run by water power gradually replaced the "homespun," or cloth which had formerly been made by hand in the homes. As time passed, more and more water power was "harnessed" for manufacturing, and mills and factories increased rapidly in number and variety.

The greatest development of water power has come in the last fifty years, as engineers have learned to generate, or make, electricity by using the force of falling water, and the United States has become the leading country of the world in the use of this hydroelectric, or water-electric, power. As you read this chapter, you will learn of the changes that have come about with the development of water power in our country. Before you read further, turn back to page 347 and study Figures 344 and 345 again.

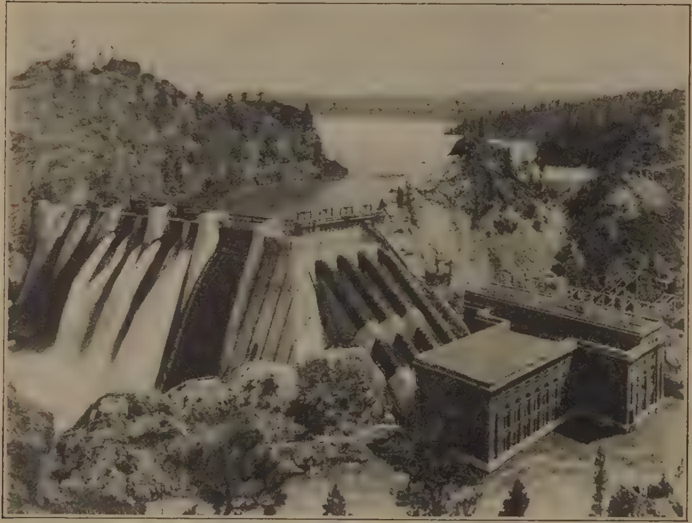


Figure 440. A modern hydroelectric plant. The dam holds back the waters of the river, forming a reservoir. Water from the reservoir flows down through huge steel pipes into the power plant, where its force turns the wheels which run the generators.

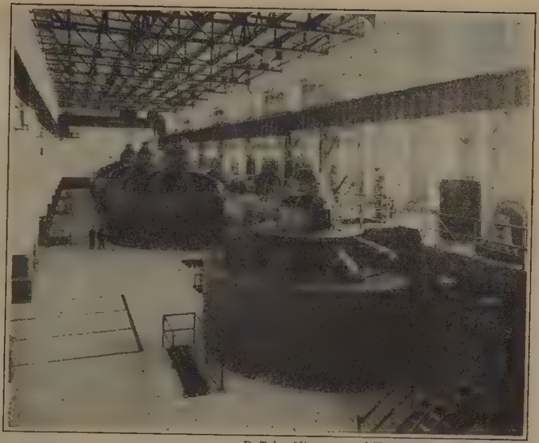
Water power and the location of mills. So long as water power was the chief source of power for manufacturing, it was necessary to locate the mills along the streams. At first only the smaller streams were used. Then, as men learned how to control more powerful streams, they built dams to "pond" some of the larger rivers for purposes of power. Ponding a stream means damming it to make a reservoir where some of its waters can be stored for use. Along the banks of many of the streams in New England and the southern Appalachian region one may still see mills and dams that were built from a hundred to two hundred years ago. Some of these old mills are still in use, but more of them have long been abandoned.

How steam power affected the location of mills. The time came when steam power, made by burning coal, began to be used for manufacturing. Then, for the first time, manufacturers were able to build mills away from the streams. Nevertheless, in many places like Lowell, on the Merrimack River in Massachusetts, where manufacturing was well established, manufacturers continued to use water power for some time, adopting steam power only after their business had become so large that the streams no longer supplied sufficient power. If, as in the case of Lowell, the mills were located where coal could be obtained easily by railroad, the industries continued to grow by use of steam power in the places where water power had given them their start. On the other hand, mills that were located where it was more difficult or expensive to get coal were, in time, abandoned, and the industries moved to more convenient locations.

New mills, built after steam power came into general use, were usually located where coal and raw materials could be brought together easily, where labor was plentiful, and where manufactured goods could be marketed to good advantage. Thus many cities and towns without water power were able to become manufacturing centers.

Hydroelectric power and the location of mills. When engineers discovered how to generate electricity from the power of falling water, the streams again became a great help in manufacturing. The power plants where the hydroelectricity is generated are located at rapids and falls in the streams or at the outlets of reservoirs where streams are ponded behind dams, but the manufacturing plants which use the electric power may be located several hundred miles away. Little by little engineers have learned how to send electricity over wires to greater and greater distances. Thus water power, transformed into electricity, now supplies light and power in many cities and towns which have no power sites, or places where water power can be developed, close by. *See Figures 440 and 441.*

The need of a constant flow of water. The most favorable places for generating electricity from water power are at falls or rapids in streams which have a constant flow. Streams that are flooded at some seasons and almost dry at others are of little use for power development unless reservoirs are built to hold back the flood waters and to make the flow of water steady throughout the entire year.



Buffalo, Niagara, and Eastern Power Corporation

Figure 441. Generators in a hydroelectric plant. These are the machines which make electricity. Generators in steam-electric plants are run by steam power.

In the well-watered eastern half of our country few streams ever go dry. The eastern streams with the steadiest flow throughout the year are those of the glaciated regions, where the many ponds and lakes serve as natural reservoirs. Nevertheless, all streams have periods of high water and low water, depending on the amount of rainfall and its seasonal distribution. For this reason engineers are careful to plan on the amount of water power that a given stream can be depended on to supply throughout the year, rather than on the amount that it can supply at its high-water periods.

In the western part of our country all the larger rivers rise in the high mountains, where the snowfall is heavy in the winter and the melting of the snow in the spring and summer helps greatly to provide a steady flow of water in the streams. Furthermore, there are hundreds of lakes and ponds high in the western mountains, and these serve as natural reservoirs for the stream waters. These conditions are especially important in California, where there is a dry season during the summer.

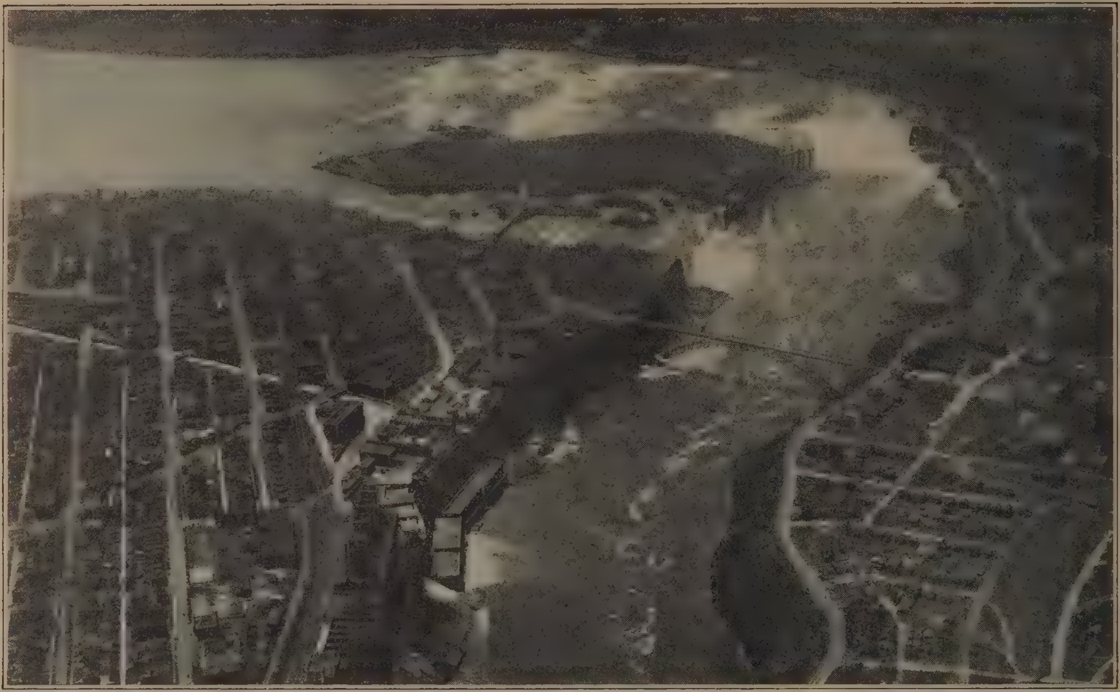


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Figure 442. An airplane view of Niagara Falls and the gorge below the falls. The buildings close to the water's edge near the bottom of the picture are hydroelectric plants. At the left you can see a canal which brings water from the part of the Niagara River above the falls to the power plants in the gorge.

The distribution of our water-power resources. No part of the United States is without possibilities for water-power development, but the regions least suited to it are, of course, the lowland plains. Many studies have been made to determine how much water power can be developed in the different sections of our country, and the results are just what we should expect. The Pacific coast states have the greatest possibilities, and the states of the Rocky Mountain region come next. Following these are the sections of the East which share the Appalachian Highlands.

The central part of the country is the least favored with water-power possibilities because it is made up so largely of lowland plains and because the western part of those plains has light rainfall. We should remember, however, that the larger rivers such as the Mississippi and the Ohio carry so much water that where they can be dammed and ponded they can be made to provide power.

In the eastern and north-central parts of our country much of the potential, or possible, water power is already in use. In the West, where water-power resources are greatest, a much smaller fraction of the potential water power has been developed up to the present time. You should be able to give two reasons for this.

Power from the Niagara River. The Niagara River, with its great falls and with four of the Great Lakes behind it as reservoirs, offers unusually favorable conditions for the development of power. Both American and Canadian power companies take water from the river above the falls and lead it by canals and pipe lines to points on the upper rim of the gorge a short distance downstream from the falls. There they allow it to fall through large tubes into their great power plants, which are located at the river's edge. As the falling water passes through the power plants, it turns the wheels which run the generators. *See Figure 442.*

Taken together, the American and Canadian power plants at Niagara generate more hydroelectric power than is developed at any other one place in North America. The governments of Canada and the United States have agreed that in the development of power at Niagara nothing shall be done that will mar the scenic beauty of Niagara Falls.

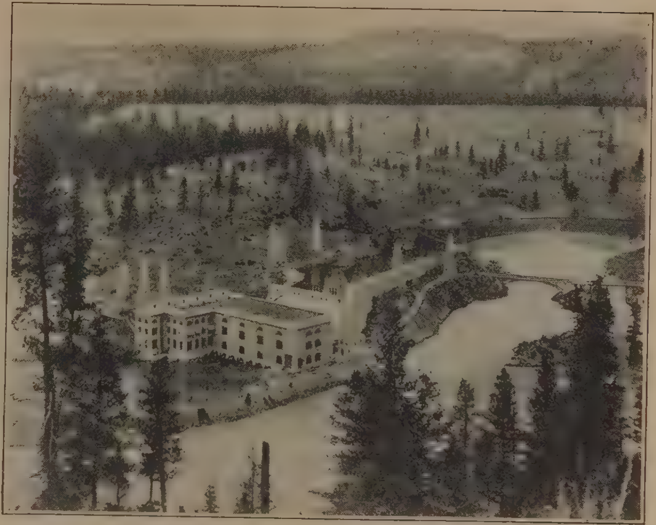

From Ewing Galloway, N.Y.

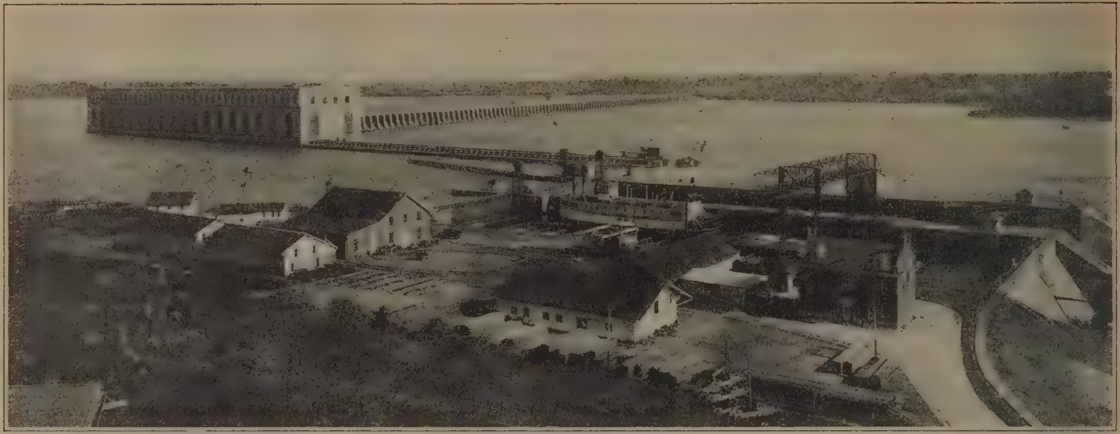
Figure 443. A hydroelectric plant in eastern Washington. Notice how the dam ponds the river. The tall steel towers support the wires over which the electricity is distributed.

The use of water power in New England. New England, which has no coal or petroleum, has developed a greater percentage of its potential water power than any other section of the country. Conditions for such development are favorable in New England because the rainfall is evenly distributed throughout the year, the rivers flow swiftly with many falls and rapids, and there are many lakes and ponds to serve as natural reservoirs.

The New England rivers which provide the most power are the Connecticut and the Merrimack, which have been ponded by means of dams at many places in their courses. Thus the waters of these rivers are made to provide power over and over again as they make their way to the sea. Many other New England rivers also are used for power purposes, and many New England industrial plants depend in part on hydroelectric power.

Power development in the southern Appalachians. Many of the rivers which rise in the Appalachian Mountains and flow eastward to the Atlantic Ocean have falls in their courses, and more and more of their power is being used to generate electricity. The Appalachian rivers which flow westward to the Ohio or the Mississippi also provide much potential power, and more and more hydroelectric plants are being built along their courses. Among these rivers the Tennessee and the Coosa have been studied very carefully by engineers, who report that there are several places along their courses where possibilities for generating electricity are remarkably good. The United States government has built a great power dam at Muscle Shoals on the Tennessee River in northern Alabama, and private companies are planning to build dams and power plants on the same river between Muscle Shoals and Knoxville, Tennessee.

Hydroelectric development in the West. Seventy-two per cent of the potential water-power resources of the United States are west of the Great Plains. One reason for this is that the rainfall and snowfall are heavy in the Rocky Mountains and in the mountains of the Far West, where all the larger rivers which flow to the Pacific Ocean have their sources. Another reason is that the rivers descend many



Photograph by H. M. Anschutz

Figure 444. The great dam and power house near Keokuk, Iowa. This is one of the largest hydroelectric developments in the United States, and by means of it the waters of the Mississippi are harnessed to provide electricity for light and power. How, in spite of the dam, can boats pass up and down the river?

thousands of feet on their way from the mountain heights down to the sea. *See Figure 443.*

At present hydroelectricity provides nearly 40 per cent of all the power used for manufacturing in the Rocky Mountain states, and nearly 50 per cent of all the power used for manufacturing in the Pacific coast states.

Power from the Mississippi River. In recent years some of our largest rivers, including the Mississippi, have been ponded by means of great dams, and part of their waters led through power plants which generate electricity. There is a dam in the Mississippi River near Keokuk, Iowa, and part of the electricity developed in the power plant there goes to St. Louis, nearly 150 miles away, where it is used for light, for manufacturing power, and to run the electric street cars. At Minneapolis also the Mississippi is ponded, and the power developed there is used in some of the great flour mills of that city. *See Figure 444.*

Hydroelectricity and steam electricity. As you already know, much electricity is generated through the use of steam power, and therefore we have steam-electric plants which use coal, as well as hydroelectric plants. The cost of building and equipping a hydroelectric plant is high, and therefore where coal can be obtained cheaply steam electricity is more generally used than hydroelectricity.

Networks of power lines. In all the more densely populated sections of our country there are networks of transmission lines for electricity, that is, lines of wires over which electricity is sent from place to place. These lines are interconnected, linking up both steam-electric plants and hydroelectric plants. Thus if one power plant suddenly has trouble and cannot deliver electricity to the places it serves, another can usually help out. For example, a recent shortage of electricity in Providence, Rhode Island, was relieved by service from northeastern New York.

The usefulness of electricity. It is through the development of modern science and engineering that men have learned to generate electricity through the use of steam or water power, and to distribute electricity over transmission lines. This progress has increased the welfare of millions of people. It has provided a source of power for mills and factories, railroads, and street-car lines. It has increased the ease and safety of travel, and has brought comforts and conveniences into the homes of the rich and the poor. Electricity is increasing in importance day by day, for more and more railroads, industrial plants, cities, towns, ranches, farms, and mines are making use of this source of power.

Water power and conservation. The important point to remember in connection with the use of falling water for power is that in such use the water is not destroyed. Coal and petroleum, our two other chief sources of power, are destroyed in use. Therefore whereever hydroelectric power is being used in place of steam power or steam-electric power made by burning coal or oil, an inexhaustible resource is being utilized in place of an exhaustible one. This is the best kind of conservation.

When the development of water power means the destruction of beautiful waterfalls, there is good reason to hesitate. As a people we have come to realize that the scenic beauty spots of our country should be preserved and that only under grave necessity should their beauty be marred or destroyed for commercial purposes. Since there are many places in the United States where hydroelectric power can be developed without harming the beauty of scenery, we are justified in hoping that it may never be necessary to sacrifice natural beauty to power development.

Sentences to complete. 1. The earliest of our mills and factories were built on the banks of streams because ______________________.

2. Today manufacturing plants make use of the power of distant rivers because ____.

3. Nearly three fourths of our potential water power is in the West because ______________.

4. The interior of the United States has less potential water power than the East or the Far West because ____________________________.

5. A much greater proportion of the water power is in use in the northeastern part of our country than in the West because ___________.

6. The Niagara River is especially well suited to power development because ______________.

Making comparisons. Mechanical energy, or power, is measured in units of *horse power*. Turn to page 516 and study Tables 27 and 28. Notice that the potential water power of the United States is estimated at 35 million horse power. That means that if all the water power of the United States were utilized, or used, it would provide 35 million horse power of mechanical energy.

First use the figures given in Table 28 to make a graph showing the amount of water power utilized in each one of the countries listed. Then use both tables to answer the following questions:

1. About what proportion of the potential water power of the United States is utilized? 1/3 2. What country ranks next to the United States in the use of water power? 3. About what proportion of its potential water power is utilized? 4. In what continent are seven of the countries that lead in the use of water power located? 5. What reasons can you suggest for the fact that so much water power is used in that continent? 6. What Asiatic country appears among those which are important users of water power? What South American country? Brazil

7. What country in the world leads in potential water power? Belg. Co 8. In what continent is it located? 9. What other countries in that continent rank high in potential water power? Fren 10. What reasons can you give for the fact that very little of the water power in that continent is used? 11. What two countries located wholly in Asia rank high in potential water power? 12. What reasons can you suggest for the fact that as yet these two countries use but a small percentage of their water power? 13. Among the European countries, what one leads in potential water power? Italy 14. What reasons can you give for the fact that that country has more water power than any other European country? 15. How does the United States rank in potential water power? 2

Some lists to make. Make lists of the ways in which electricity is used (1) in private houses; (2) in factories; (3) in office buildings; (4) on farms; (5) on city streets; (6) on railroads; (7) in providing means of communication.

IX. THE GROWTH OF MANUFACTURING

Foreword. Can you imagine what it would be like to live in a country where there are no modern means of transportation and communication such as railroads, automobiles, airplanes, telephones, and radio sets? Or where there are no modern conveniences for saving time and work such as farming machinery, manufacturing machinery, sewing machines, or vacuum cleaners?

In spite of all the progress that has been made in the last fifty years, there are still many places in the world where the people have few or none of the modern conveniences. Living conditions differ greatly in the various parts of the world, chiefly because in certain sections manufacturing industries and modern ways of doing things have been developed which save time and work for the people, while in other sections no such development has taken place. We live in one of the countries where the greatest progress has been made in all lines of modern improvements, and the story of the growth of our manufacturing industries is intensely interesting.

Before you read further, make as long a list as you can of the things you use and enjoy which are products of our manufacturing industries.

1. Simple Beginnings

The word *manufacturing* means "making by hand," and of course the beginning of such work dates far back in human history. The earliest peoples used stone and wood for making tools and weapons such as hammers, axes, spears, and bows and arrows. People who lived near bodies of water learned to make wooden boats of various patterns. As time passed, men learned to make many different tools for work and articles for use in their homes, but for many centuries they made them all by hand.

The colonists who lived near our Atlantic coast during the years before our War for Independence carried on some manufacturing, but even in those days there were no manufacturing plants such as we have today. In fact, no one even dreamed of the machines that would some day turn out huge quantities of manufactured goods with little or no hand labor. Do you know how the colonists supplied their needs for manufactures?

Early manufactures of wood. The early colonists brought some furniture and tools from Europe; but once they were here, most of them could not afford to pay the cost of importing such things from the home countries. Needs arose at once for many different manufactures of wood such as chairs, tables, bedsteads, ax handles, boxes, wagons, and boats.

At that time there was an abundant supply of oak, maple, pine, and other useful woods in the forests which surrounded the settlers' homes. Carpenters began to make window frames, door frames, wagon bodies, wheels, sleds, and other necessities, and the better workers among them began to make furniture. Coopers made barrels and boxes, and boat-builders began to build wooden boats and ships. In time sawmills run by water power were built to supply the carpenters, coopers, and boat-builders with sawed lumber.

Spinning and weaving. In the early days only the few people who were wealthy could afford to buy cloth for clothing and other uses from Europe, and most of the cloth that was used was made in the homes. To supply the necessary raw materials, the settlers raised flax and kept sheep. The flax and the wool were spun into thread with the use of spinning wheels, and the thread was woven into cloth on hand looms. The chief clothing material was "linsey-woolsey," made of flax and wool combined. *See Figure 445.*

Other home manufactures. It is hard to realize how much home manufacturing had to be done in colonial days in order to supply the everyday needs of the people. Leather was tanned on the farms and used to make shoes, harness, and other things. Soap, candles, rugs, rope, and twine were among the many other articles made by hand in the colonial homes.

Manufactures of iron. There was, of course, a need for certain manufactures of iron such as blades for tools, rims for wagon wheels, hinges, and nails. Iron ore was discovered in various places, and was smelted with the use of charcoal for fuel. Small forges were set up where the iron was hammered into different shapes. Many a farmer spent his winter evenings making nails by hand from long, slender rods of iron, and in many of the old New England houses hand-made nails can still be seen. None of the houses built before the Revolution have machine-made nails, for the first nail-manufacturing machine was not invented until 1790.

Traveling workmen. As time went on, workmen skilled in certain trades began to travel about, staying a week or two at one farm and then at another. Oftentimes a traveling tailor would make clothes for all the men and older boys in the family, or a traveling shoemaker would make enough shoes to last all members of the family for a year. Such a workman usually continued his habit of journeying from place to place until he found a community which had grown to be large enough so that he could settle there and keep busy all the time.

Settled workmen. As villages and towns grew in size, each one came to have its settled workmen,— shoemakers, tailors, blacksmiths, tinsmiths, carpenters, millers, and others who did special kinds of work for the rest of the people. Oftentimes a trade was carried on in the same family for many years, handed down from father to son.

A picture exhibit. Try to find pictures of old spinning wheels, looms, candle molds, sawmills, gristmills, blacksmith shops, and other pictures which show how manufacturing was carried on in colonial days. Arrange the pictures for classroom exhibit, labeling each one neatly.

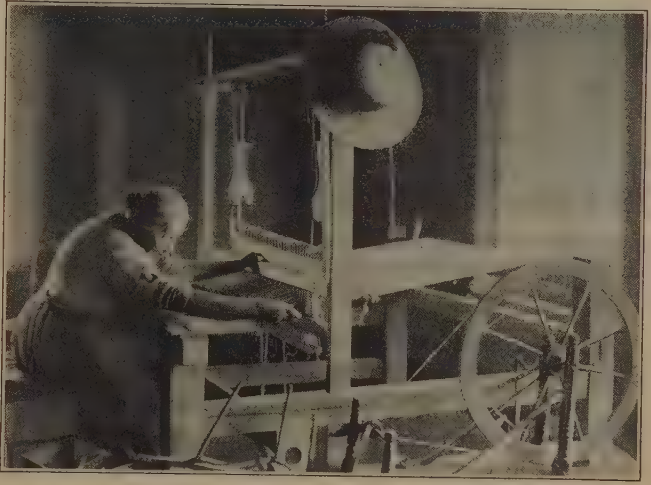


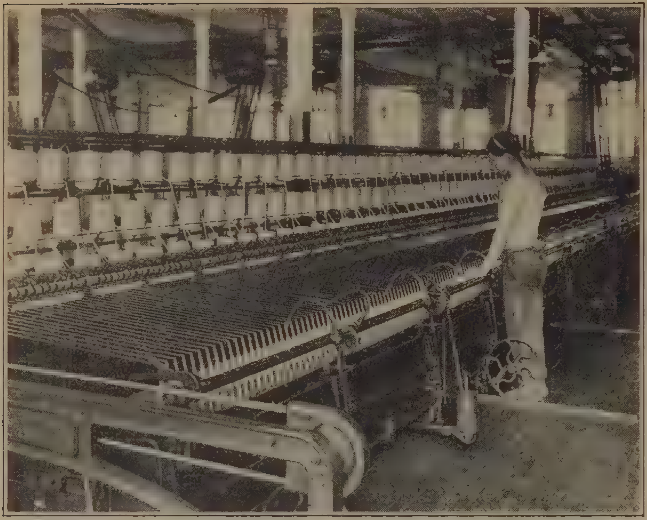
Figure 445. Old-time weaving. The woman in the picture is weaving cloth on a hand loom such as people used in colonial days. Beside the loom is an old-fashioned spinning wheel.

Committee work. You will find it interesting to learn about some of the inventions which led to the change from hand work to machine manufacturing. Look up the following subjects and report on them to the rest of the class:

1. James Watt and the steam engine.
2. Eli Whitney and the cotton gin.
3. Samuel Slater and cotton-manufacturing.
4. Elias Howe and the sewing machine.

Topics for classroom discussion. 1. Discuss what is meant by (1) raw materials for manufacture and (2) finished products of manufacturing. Give several examples of each.

2. Discuss the reasons for the location of manufacturing plants (1) in regions of swift-flowing streams; (2) near coal fields; (3) in large cities; (4) at seaports.



Photograph by Ewing Galloway, N.Y.

Figure 446. A spinning machine in a woolen mill at Lawrence. This great machine completes the process of spinning the fibers of wool into thread, ready for use in weaving.

An industrial study. All the members of the class may work together in making this study.

1. If you live in a manufacturing district, make a list of the more important manufacturing plants in your city or town. Find out where the principal raw materials that they use come from, what kind of power is used, and where the finished products are marketed.

2. If you do not live in a manufacturing district, make a list of any raw materials that are sent from your home region to mills and factories elsewhere. Find out all you can about the use that is made of each raw material.

2. Some Great Manufacturing Industries

With the rapid growth of population in this country the demands for manufactures increased greatly. The people needed more and more food, clothing, and household furnishings. Farmers called for implements which would make it possible to cultivate more land and produce larger crops. Millers wanted better machinery to grind grain. Shoemakers, spinners, and weavers needed means of turning out their products more quickly. Fortunately, great progress was being made in science and engineering, and there followed a period of rapid growth in our manufacturing industries. As a result of this growth the United States has become the leading manufacturing country of the world.

In this section you will learn about a few of our more important manufacturing industries. It must be remembered that the changes described did not come about all at once, for in the early days people did not change their ways of work as quickly as people do today. Little by little, however, hand manufacturing gave way to machine manufacturing, and machine manufacturing has greatly increased the comfort and well-being of all the people.

Textiles and Clothing

Cotton and woolen mills. Soon after machines for spinning and weaving had been invented in England, the people of our country began to build cotton and woolen mills in which cloth could be manufactured much faster by machinery than was possible by hand. The textile industries were, therefore, among the first to become factory industries.

Spinning mills were built at several places in the East before 1800, but the first modern textile mill in this country was built in 1814 in Waltham, Massachusetts. There, for the first time, all the operations necessary for making cloth were carried on in a single plant, and there the first power loom was used. The machinery was run by water power.

When it became clear that textile manufacturing by machinery had come to stay, manufacturers sought power sites on the larger rivers. Cotton and woolen mills were built at Lowell and Lawrence on the Merrimack River in Massachusetts, and farther upstream on that river at Manchester and other places in New Hampshire. Today the largest woolen mills in the world are located at Lawrence. *See Figure 446.*

It was not many years before woolen mills were scattered widely over New England, for sheep were raised on most of the farms, and small mills could be run successfully wherever there were streams to provide water power. The more important centers of cotton-manufacturing developed nearer the coast, for cotton had to be brought to New England from the South. The Merrimack Valley, the Blackstone Valley extending from Worcester, Massachusetts, to Providence, Rhode Island, and the southeastern coast of Massachusetts where Fall River and New Bedford are located became the leading cotton-manufacturing districts. *See Figure 447.*

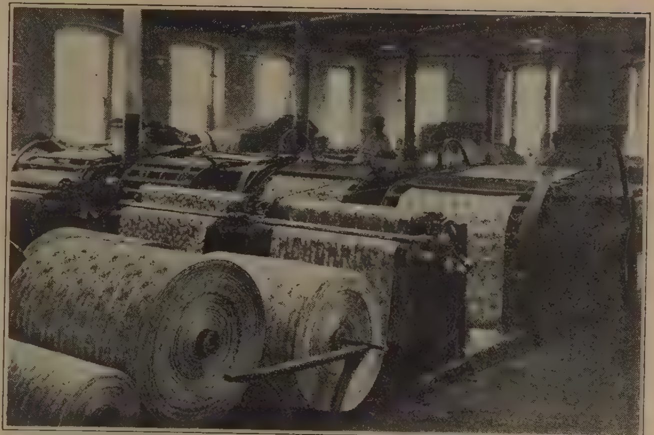

Photograph by Ewing Galloway, N.Y.

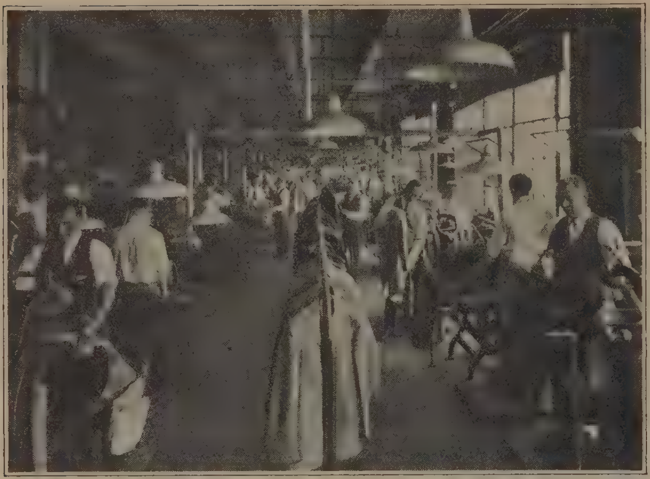
Figure 447. A view in a textile printing plant in Fall River, Massachusetts. In this mill plain cotton cloth is put through printing presses which stamp colored designs on it.

Textile manufacturing in the early days was not limited to New England, for many mills were built in the Middle Atlantic States. Paterson, New Jersey, and Philadelphia were among the first cities in this section of the country to have textile mills, and they are important textile-manufacturing centers today.

Cotton mills in the South. Cotton-manufacturing, which made such an early start in the northeastern part of the country, later spread to the South, and today much of the cotton cloth produced in the United States is manufactured in the cotton belt. The greatest cotton-manufacturing section of the South is the Piedmont Belt from North Carolina to Alabama. This section has two great advantages for cotton-manufacturing: nearness to the raw material, and many streams which can be harnessed to provide hydroelectric power for the mills. In recent years New England manufacturers, as well as Southern manufacturers, have built cotton mills in the South, and the mills of the Southern States now consume much more raw cotton than do the mills of New England.

Silk mills. The manufacture of silk goods in this country began much later than the manufacture of cotton and woolen goods, for it could not become a large industry until there were modern means of transportation to bring raw silk from Japan, China, and Italy. The leading silk-manufacturing districts are in southern New England, eastern Pennsylvania, New Jersey, and New York State. Paterson, New Jersey, leads all other cities in the country in this industry. The silk mills are located, for the most part, in places where there is much heavy work to be done, such as is required in mining or in manufacturing steel or machinery. Large numbers of foreign workmen are employed for such work, and the women and girls in their families are glad to do the light work required in the silk mills.

The newest textile industry. In recent years many of our cotton mills have been producing more and more cloth made wholly or partly of rayon. Rayon is often called artificial silk because of its silky appearance. It can be made from several different raw materials, but those most commonly used are cotton waste and very pure wood pulp. The raw material is changed by chemical means



Photograph from Ewing Galloway, N.Y.

Figure 448. The pressing room in a men's clothing factory in Chicago. The workers in this room press the finished suits. Chicago is a great center for the manufacture of clothing.

into a jelly-like substance and then forced through the openings of very small tubes. It comes out of the tubes in the form of threads which are dried quickly and which can be woven into cloth like the spun fibers of cotton, wool, flax, and silk.

The manufacture of clothing. Even after spinning and weaving had become factory industries, clothing continued for many years to be made by hand at home or in tailor and dressmaking shops. Many people still have their clothes made by hand, but by far the greater part of the clothing worn in our country is now made in factories. It was the invention and improvement of sewing machines and machines for cutting cloth to clothing patterns which led to the large-scale production of "ready-to-wear" clothes in factories. Even in the factories, however, the finishing of the better garments is done by hand. *See Figure 448.*

Large cities as centers for clothing manufacture. In all our large cities and in many of the smaller ones there are clothing factories today. That is because the important requirements of clothing manufacture are (1) plenty of workers for the factories; (2) plenty of customers for the finished products; (3) power to run the machines; and (4) easy means of obtaining the necessary raw materials, chiefly cloth and thread.

All the larger cities are located where the raw materials can be brought in by rail or boat or both. Electricity, which is now supplied in abundance to all good-sized cities, is the most convenient kind of power for running sewing and cutting machines. Most cities can supply the necessary workers for the factories and many customers for the clothing, and have means of transportation whereby surplus supplies of the finished products can be sent to outside markets.

Foreign-born workers are employed in large numbers in the clothing factories, and so it is not strange that New York City, Philadelphia, and Baltimore — three of our great Atlantic seaports — should be among our leading centers of clothing manufacture. Nor is it strange that among all our manufacturing industries the making of clothing is one of the five which show the highest value of finished products. Everyone has to have clothing, and most people like as great a variety of clothes as they can afford.

Sentences to complete. 1. The manufacture of cloth is a very important industry because --.

2. New England and the Middle Atlantic States were able to begin the manufacture of textiles by machinery before the days of steam power because --------------------------.

3. The Southern Piedmont is an important cotton-manufacturing region because --------.

4. Most of our silk mills are located in cities where other industries requiring heavy work are carried on because ----------------------.

5. Our greatest centers of clothing manufacture are in our largest cities because ---------.

The Manufacture of Foods

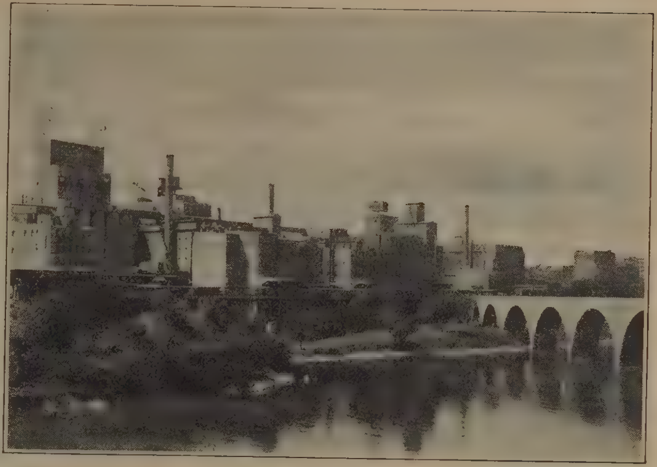


Figure 449. Some of the large flour mills at Minneapolis. On what river is Minneapolis located? In what way does the river help in the flour-milling industry of the city?

The preparation of foodstuffs for use. Since food is a necessity for everyone, the production of foodstuffs and their preparation for use are industries of great importance. Some of our foods, such as fresh vegetables and fruits, are sold in the form in which they come from the farms. Others go through manufacturing processes before they are sold to the consumer. We have already learned that large quantities of fruit, vegetables, and fish are canned or preserved in other ways. Raw sugar must be refined for use; coffee beans must be roasted and ground; cacao beans must pass through several manufacturing processes to make cocoa and chocolate.

No doubt you can think of many other foods that go through manufacturing processes before they are offered for sale in the stores. All together, the various manufacturing industries of our country which have to do with the preparation of foodstuffs turn out products valued at more than ten billion dollars a year. Among these industries meat-packing and grain-milling are the most important.

Meat-packing. Our meat-packing plants turn out each year hundreds of millions of pounds of fresh pork, beef, veal, mutton, and lamb, and huge quantities of meat in other forms such as bacon, smoked ham, and sausage. In addition, they produce many different by-products of great value. Among these are hides and skins, lard, tallow, soap, glue, oleomargarine, and fertilizer materials.

As you would expect, meat-packing is centered chiefly in the large cities of the interior of our country where so many meat animals are raised and fattened for market. Chicago is the great leader in this industry, but Kansas City (Kansas), Omaha, East St. Louis, Indianapolis, Cincinnati, and other cities of the Central Plains play a large part in it. Outside the Central Plains, New York City is the greatest meat-packing center. Can you explain why?

Grain-milling. Grain-milling is the grinding of grain into flour and meal. Wheat flour is by far the most valuable product of this industry because wheat is our chief bread grain. The mills also grind corn, rye, oats, and buckwheat, which are used in much smaller quantities for food. *See Figure 449.*

Grain-milling, like meat-packing, is one of the great manufacturing industries of the central part of the country. Minneapolis, located near the eastern margin of the rich spring-wheat lands, is the greatest flour-milling city of the country. Next to Minneapolis comes Buffalo, which has an exceptionally favorable location for flour-milling. Grain comes down the Great Lakes in freighters to this city, and flour is sent by train to the great centers of population farther east. Kansas City is the third great milling center because of its location near the eastern margin of the winter-wheat lands. In the West, Seattle and Portland are the leading flour-milling centers, using chiefly wheat from the Columbia Plateau.

Breakfast cereals and bakery products. Closely related to the flour-milling industry are the manufacture of breakfast cereals and the making of bread and other bakery products. Cereals such as oatmeal and corn flakes are made largely in the cities of the Central Plains, where the grains are produced in largest quantities.

For many years nearly all the bread eaten in this country was made in the homes, and most housewives set apart one day of each week as "baking day." Today it would be hard to find a town without at least one bakery, and the larger cities have hundreds. The total value of the bread and other products of the bakeries is about the same each year as the total value of the grain-mill products.

Some things to explain. Explain

1. Why it is necessary for many foodstuffs to pass through some manufacturing process before they are sold to the consumer.
2. Why our meat-packing and grain-milling industries are centered largely in the Central Plains.
3. Why meat-packing plants are able to turn out many other products besides meat.
4. Why more wheat than corn is ground in our grain mills.
5. Why "baking day" has been given up in large numbers of homes.
6. Why large quantities of fruit, vegetables, and fish are canned, or preserved in other ways.

Leather and its Manufactures

The leadership of the United States. The United States now leads all other countries of the world in the manufacture of leather and products of leather. As you have already learned, many of the hides and skins are produced in our own country; but we also import large quantities of these raw materials. Name some of the countries from which they come.

Chief centers of leather manufacture. There are two sections of our country in which there are many centers of leather manufacture. One section extends from New York State southward to Alabama, and the other extends from Massachusetts westward to Wisconsin. Leather-manufacturing began early in these sections because of the abundance of hemlock, oak, and chestnut trees. From the bark of these trees the extract known as *tannin* was made for use in tanning the hides and skins. Much later we began to import tannin extract obtained from the wood of the quebracho trees of Argentina and Paraguay. At present quebracho extract and tannin made from chestnut bark are used most largely for tanning, but there are also newer chemical processes by which hides and skins are made into leather.

Since so many hides and skins are imported, the seaports have a special advantage for leather manufacture. Philadelphia, Boston, and New York, ports through which large quantities of hides and skins enter our country, are centers of important leather-manufacturing districts, and Philadelphia produces more leather than any other city in the world. In the interior of the country Milwaukee and Chicago are leading centers of leather manufacture. *See Figure 450.*

Boots and shoes. We have already learned of the traveling shoemakers and the village shoemakers of earlier days. It was more than fifty years after the invention of spinning and weaving machinery that machinery for making boots and shoes came into use. After its invention shoemaking soon became a factory industry, and today it provides work for more than 200,000 people in the United States.

New England, with its early start in shoe-manufacturing, has more than a third of all the shoe factories in the United States, and Massachusetts makes more shoes than any other one state. The great shoe-manufacturing centers of Brockton, Lynn, Haverhill, and

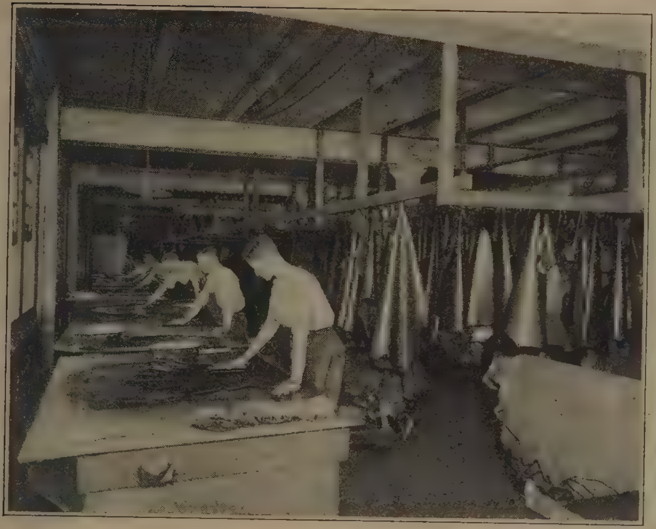
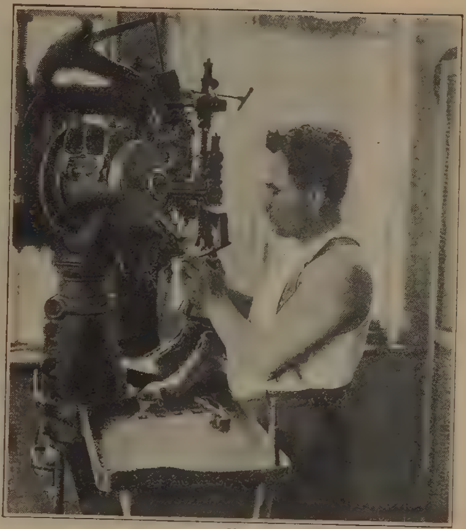


Figure 450. A view in a leather-manufacturing plant in Ohio. The men in the picture are at work putting the finish on the leather. How many different uses of leather can you name?



Photograph by Ewing Galloway, N.Y.

Figure 451. A worker in a shoe factory in New York State. The use of machinery of this kind requires training and skill.

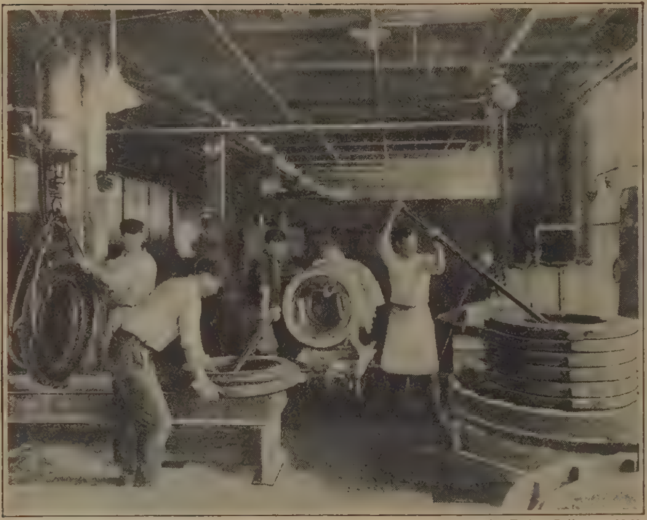
Boston form what is known as the Boston shoe-manufacturing district. Large quantities of shoes are also made at Manchester, New Hampshire, and at Auburn, Maine, and smaller quantities in many other New England towns and cities. Ranking second only to Massachusetts in shoe-manufacturing is New York State. *See Figure 451.*

Among the shoe-manufacturing cities of the country as a whole, New York City ranks first, Brockton, Massachusetts, second, and St. Louis third. Many other cities in the Central Plains besides St. Louis have shoe factories, for shoe-manufacturing has spread westward with the increasing population in the central part of the country. Shoe-manufacturers in the Central Plains have the advantage of being near our domestic, or home, sources of hides and skins.

Glove-manufacturing. More than eight tenths of all the hides and skins tanned in this country are used for shoe leather, and nearly one tenth are used to make leather for gloves. Nearly two thirds of all the gloves, by value, are made in New York State, where the industry is centered largely in the cities of Gloversville and Johnstown. The principal reason for this is that more than a hundred years ago Scotch people who were expert glove-makers settled in those places and gave glove-making an early start there. At first all the work was done by hand in the homes, but after the invention of the sewing machine factories were built. Today some of the gloves are made in factories and some are made in the homes of the workers with the use of sewing machines run by electricity.

Other uses of leather. There are, of course, many other uses for leather. Harness and saddles, upholstery, traveling bags and suit cases, pocketbooks and purses are among the useful articles which are made in large quantities from this material. Factories for making such products are found in many of our cities, and their combined output is valued at more than two hundred million dollars a year.

A leather exhibit. Collect samples of as many different kinds of leather as possible. Mount and label them neatly and arrange them for exhibition in your schoolroom.



By Ewing Galloway, N.Y.

Figure 452. Workmen in a tire factory removing automobile tires from the molds. In what way are our rubber-manufacturing companies dependent on our trade with foreign lands?

The Rubber Industry

The uses of rubber. The native Indians of the New World used bits of rubber as ornaments and the Indian boys played games with crude rubber balls. When the first samples of this New World product reached England, people found that it could be used to erase pencil marks. That is how it came to be called rubber.

In 1800 Brazil, which then belonged to Portugal, was the only country manufacturing articles of rubber, and the Brazilians found their best markets for rubber boots, water bottles, and other rubber goods in the United States. Some years later a Scotchman named Mackintosh discovered how to use rubber to make cloth waterproof. This was the beginning of the making of rubber coats, and some people still refer to raincoats as mackintoshes.

At first, however, rubber boots and rubber coats were not very satisfactory, for they became hard and stiff in cold weather and soft and sticky in warm weather. Then, in 1839, a Connecticut hardware merchant named Charles Goodyear discovered the process of "vulcanizing" rubber so that it would be strong and elastic and yet not be affected by ordinary changes in temperature. It was this discovery that made possible the great development of rubber-manufacturing.

For many years practically all the world's crude rubber came from the wild trees in the Amazon Basin of Brazil. The first rubber plantation was started in Ceylon about fifty years ago. This was the beginning of rubber production in southeastern Asia. Today more than nine tenths of all the world's crude rubber comes from plantations in British Malaya, the East Indies, Ceylon, and Burma.

The growth of rubber-manufacturing. For many years rubber was used chiefly for making footwear, waterproof clothing, and rubber goods such as water bottles, tubing, and hose. When bicycles and then automobiles came into common use, the demand for tires led to a great increase in rubber-manufacturing. Today the United States manufactures two thirds of all the rubber tires and inner tubes used in the world, and about four fifths of all the crude rubber which we consume is used for these products. *See Figure 452.*

The United States is the outstanding country of the world in rubber-manufacturing, using from six to seven tenths of the total world production of crude rubber each year. As yet we do not produce any rubber in this country, and therefore all that we use must be imported. More than half of it comes from British Malaya, and the remainder chiefly from the East Indies, Ceylon, and Brazil.

Rubber-manufacturing centers. Since all our crude rubber is imported, there are many rubber factories in and near the seaports of southern New England and the Middle Atlantic States. The greatest center of the rubber-manufacturing industry, however, is Akron, Ohio, where two thirds of all the automobile tires made in this country are manufactured. Rubber-manufacturing was begun in Akron in 1871. Later, when automobile-manufacturing developed, Akron was in a better location to manufacture tires than were the cities on the eastern seaboard, for automobile-manufacturing came to be centered largely in the cities in the northeastern part of the Central Plains. Its early start and its location, then, account for the leadership of Akron in rubber-manufacturing today.

There are factories for making tires, inner tubes, and other rubber goods in many of the larger cities of the Central Plains, chiefly because of the large markets of that region. On the Pacific coast Los Angeles has become a center for the manufacture of automobile tires and tubes.

Giving reasons. 1. Leather-manufacturing began much earlier than rubber-manufacturing in our country because ....

2. The earlier centers of leather manufacture were in the forested regions of the eastern and north-central parts of the country because ....

3. Philadelphia and Boston are leading leather-manufacturing centers because ....

4. New England is a great center of shoemaking because ....

5. Much leather is tanned and many shoes are made in cities of the Central Plains because ....

6. New York manufactures far more gloves than any other state because ....

7. Rubber-manufacturing has increased very fast in this country in the last twenty-five years because ....

8. There are many rubber factories near the coast in the northeastern part of our country because ....

Figure 453. Finishing doors in a mill in Wisconsin. The man in the picture is putting the doors through a machine which gives them a final polish with fine-grained sandpaper.

9. Akron is the outstanding leader among our rubber-manufacturing cities because ....

Special credit work. 1. Try to find out what experiments are being made in rubber-growing in our country and make a report about it.

2. Find out how Charles Goodyear happened to discover the process of vulcanizing rubber, and tell your class about it.

Industries Dependent on Wood

The woodworking industries. When lumbermen cut down trees in the forest and saw the trunks into logs, this is but the beginning of the work which transforms trees into so many useful products. The logs are transported to sawmills where they are used to make boards, shingles, and other rough lumber, or to planing mills where better-finished lumber such as is used for doors, blinds, and interior woodwork for houses is made. Large quantities of the better qualities of lumber are used for making furniture, and large quantities of the poorer qualities for making barrels, packing boxes, and crates of all kinds. *See Figure 453.*

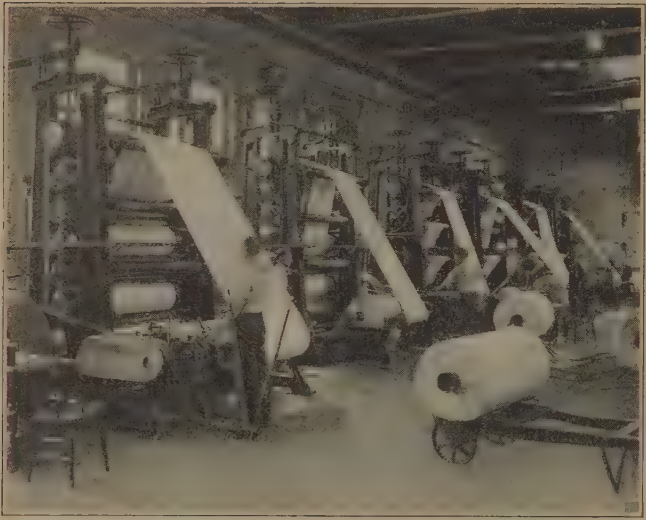


Figure 454. A view in a New England paper mill. In this picture the paper is being "calendered," or ironed between rolls of chilled steel and cotton to give it a smooth surface.

The woodworking industries of our country are carried on for the most part near our great forests or in regions where there were extensive forests in the earlier days of our history. One such region extends from New England westward through New York State and Michigan to Wisconsin. Another extends southward through the region of the Appalachian Highlands, and a third is found in the lumbering belt of the Gulf Coastal Plain. A fourth, and very important, woodworking section of the country is the lumbering region of the Pacific coast states.

In the eastern and northern parts of the country woodworking industries have been carried on so long and have drawn so heavily on the forests close by that they now depend on the South and the West for a considerable part of their raw material. But these parts of the country made an early start in woodworking, they have an abundance of skilled workmen, and — most important of all — they have large markets for wood products close at hand. For these reasons the manufacturers find it worth while to buy lumber from distant parts of the United States and from foreign countries and to continue manufacturing wood products in the places where the industry has long been established.

Wood pulp and paper. When you were studying about the forests of the United States you learned of the great quantities of wood that are used to make wood pulp and paper. Papermaking has increased very rapidly in the last few years for several reasons. One is that more and more books, magazines, and newspapers have been printed, and newspapers have increased the size of their editions. Another is that more and more cardboard has been used for packing cases. Because of the increase in papermaking, we have doubled our consumption of pulp wood since 1914.

Most of the mills that manufacture both wood pulp and paper are in northern New England, northern New York State, and Wisconsin, where second-growth forests of softwood trees provide large quantities of pulp wood. Large numbers of mills which manufacture paper, but not wood pulp, are located in southern New England, central and southern New York State, New Jersey, and southeastern Pennsylvania, the part of the country where the consumption of paper is greatest. Ohio, Michigan, Indiana, and Illinois also have many paper mills. There are a few pulp and paper mills in the South and in the Northwest, but the northeastern quarter of the country is far in the lead in this industry. *See Figure 454.*

Industries Dependent on Iron and Steel

Increasing demands for iron and steel. When you were studying about the mineral resources of our country, you learned where our great iron-and-steel manufacturing centers are located. These centers owe their continued growth to the ever increasing demand for iron and steel. Iron has been used for many centuries, but it was less than a hundred years ago that men learned how to change iron into steel, which is much stronger. Huge quantities of iron and steel are now needed for the railroads, for the building of ships, for the manufacture of machinery, for the construction of buildings and bridges, and for many other purposes.

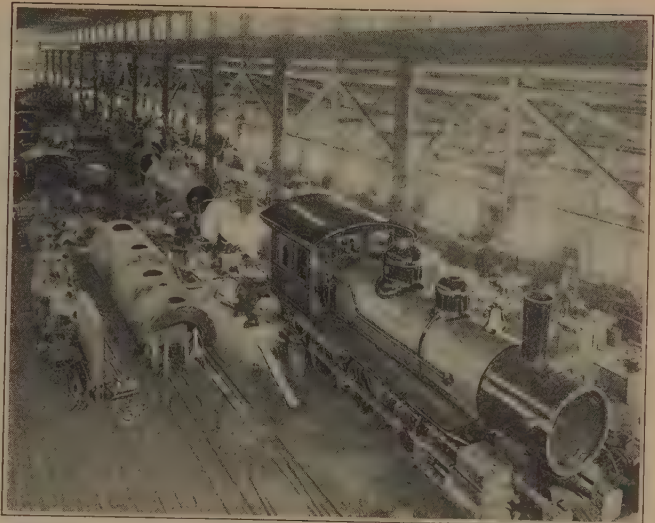

Courtesy of Vulcan Iron Works

Figure 455. Manufacturing locomotives at Wilkes-Barre, Pennsylvania. The locomotives shown in this picture are being built for use on railroads in Cuba and South America.

Today over eight hundred thousand workers are engaged in various branches of the iron-and-steel industries of our country, and the total value of the iron and steel products amounts to over six billion dollars a year. No industry has changed our ways of living so much or brought so many modern conveniences into use as has the iron-and-steel industry.

The effect of railroad-building on the iron-and-steel industry. When, about a hundred years ago, railroad-building began in this country, it marked the beginning of a new use of iron. Iron was needed for locomotives and for rails. For a time thin strips of iron were laid on wooden rails; but as these proved to be too weak, solid iron rails soon began to be used. Later, when the process of making steel was discovered, steel rails took the place of iron rails, and much steel was used in making locomotives. More recently steel passenger cars have been rapidly replacing wooden cars. *See Figure 455.*

As more and more railroads were built, the demands for iron and steel became greater and greater, and since 1860 from one third to one half of the iron and steel produced in this country has been used by the railroads. The demand for iron and steel for railroads increased steadily until about 1900. Can you explain why the demand has not continued to increase at the same rate since that time?

Shipbuilding. In colonial days all ships were made of wood. Today we still build and use many wooden ships, but our great ocean liners, our naval vessels, and many of our large freighters are built of steel.

So long as ships were made of wood, New England was the leading shipbuilding section of our country, chiefly because it made the earliest start in this industry and because in earlier days its forests provided abundant timber for ship construction. New England still builds many ships, some of wood and some of steel, but the center of the steel shipbuilding industry is farther south, along the coast of the Middle Atlantic States, where steel can be obtained more easily from the iron-and-steel plants of Pennsylvania. Camden, New Jersey, Philadelphia, and Wilmington, Delaware, have large shipbuilding yards which make the estuary of the Delaware River one of the greatest shipbuilding districts of the world. On the Pacific coast the chief center for the building of steel ships is San Francisco Bay.

The manufacture of machinery. Since the time when first steam power and then electric power came into use, every year has seen the invention and perfection of more and more kinds of machinery. Today machinery of one kind or another is used in all kinds of work,—especially in farming, lumbering, mining, manufacturing, and transportation. Since the principal raw materials used in the manufacture of machinery are iron and steel, these products are essential to modern industry.

Farming machinery. When you were studying about the development of agriculture in the Central Plains, you learned that that development led to the invention of all kinds of farming implements and machines. Some of the first improvements in agricultural equipment were made in the East, but it is in the gently rolling Central Plains, where farming machinery can be used to better advantage than in the rougher lands of the East, that most of our modern farming machinery has been invented and perfected.

The first successful iron plow was invented by a man in New York State, but the chilled-steel plow, which was much better, was invented and perfected at South Bend, Indiana. The first small factory established there to manufacture plows was the beginning of an industry which has made South Bend well known in all the farming countries of the world.

Cyrus McCormick, who invented the first successful harvester, was the son of a farmer in the Shenandoah Valley of Virginia. When he had perfected his machine, he went to Chicago and in 1847 built a factory there, founding what has become the greatest company for the manufacture of agricultural machinery in the world.

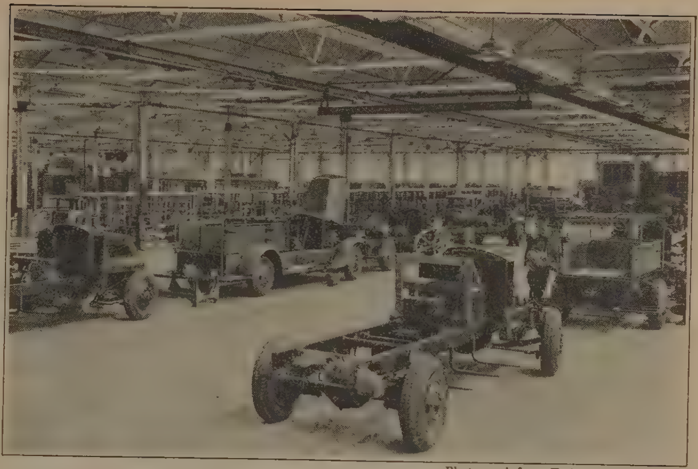
Many pages of this book would be needed to tell the stories of inventions in various cities and towns of the Central Plains which have made this region the great center for the manufacture of agricultural machinery in this country. The development of this industry has been a service to the entire world, for in addition to supplying the large "home" demand for farming implements and machines in this country, the factories of the Central Plains send their products to every other farming country of any importance.

Industrial machinery. Another important branch of the industries depending on iron and steel is the making of machinery for manufacturing purposes. Very few of the things that we use today are made without the help of machinery, and it is machine manufacturing that makes it possible for people of moderate means to have almost as many comforts and luxuries as the very rich.

The making of industrial machinery of various kinds tends to be centered in places where the demand for a special type of machinery is greatest, or where the demand was formerly greatest in the early days of manufacturing. For example, New England is a leading center for the manufacture of textile and shoe machinery. Cotton gins, on the other hand, are manufactured chiefly in the South. Perhaps you know of other kinds of industrial machinery that are manufactured in certain places for similar reasons.

The automobile industry. The invention of the steam locomotive was the world's first great step forward in land transportation. Then, many years later, came the automobile and the motor truck, which have largely taken the place of horse-drawn carriages and wagons. In 1900 the United States produced nearly 1,500,000 carriages and wagons and but 4000 automobiles. At present we are building each year, on the average, less than 200,000 carriages and wagons and more than 4,000,000 motor vehicles. Today the value of the motor vehicles, including bodies and parts, manufactured each year in this country is greater than the value of the products of any other single industry. Furthermore, we are the outstanding country in this industry, building more than four fifths of the world's automobiles and motor trucks each year. *See Figure 456.*

Some of our automobiles are built by companies which began business as carriage-and-wagon manufacturers. More, however, are built by companies which have grown up independently since the invention of the automobile. The region bordering the Great Lakes, where there is water transportation for iron ore from the Superior district and where wood can be obtained easily from northern Michigan and Canada, has become our greatest automobile-manufacturing district. Detroit is by far our greatest automobile-manufacturing city, and from there the industry has spread to other cities in southern Michigan — Flint, Pontiac, and Lansing. Other important centers of the industry on or near the Great Lakes are Cleveland, Buffalo, Toledo, South Bend, and Chicago. Indianapolis and St. Louis, farther south, also manufacture large numbers of automobiles. The development of the motor-vehicle industry has increased the population in many cities and has provided employment for thousands of mechanics and other workmen.



Photograph from Ewing Galloway, N.Y.

Figure 456. The fire apparatus department of a factory where motor trucks are built. In this room the various parts of motor fire engines and other fire apparatus are assembled, or put together.

The making of automobile bodies has become a special industry, and is carried on in many places far away from those where the motor engines and chassis are made. With the making of automobiles has come the manufacture of numerous accessories, or small parts, and scores of cities in the Central Plains and in the East have factories for making such parts.

Something to do. Look in newspapers and magazines for advertisements of automobiles. List the places where the different makes of automobiles are built, and locate them on a map.

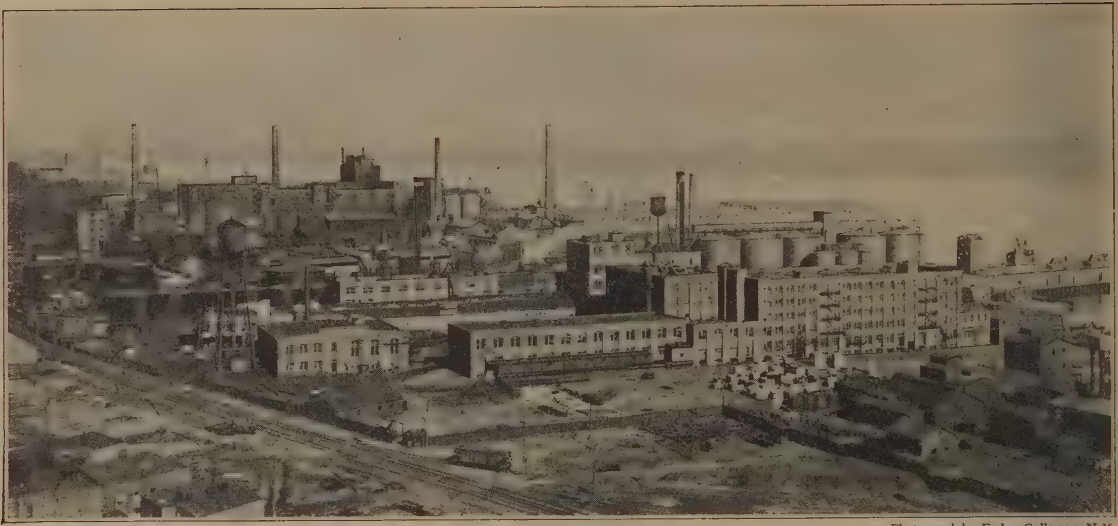
Some things to prove. Give all the facts you can to prove that these statements are true.

1. Iron and steel are essential to nearly all the more important kinds of manufacturing.
2. Modern means of transportation are largely dependent on iron and steel.
3. Farming has benefited greatly through the use of iron and steel.
4. Lumbering and the woodworking industries require the use of much iron and steel.
5. Mining requires the use of iron and steel.

Matching cities and manufactures. Each city listed in the first column below is a leader in the manufacture of one of the products given in the second column. Match the cities and manufactures correctly.

10 Akron
8 Chicago
1 Detroit
5 Gloversville, N. Y.
12 Lawrence, Mass.
4 Minneapolis
3 New Bedford, Mass.
2 ~~7~~ New York City
11 Paterson, N. J.
7 ~~2~~ Philadelphia
6 Pittsburgh
9 South Bend, Ind.

1 automobiles
2 clothing
3 cotton goods
4 flour
5 gloves
6 iron and steel
7 leather
8 meat
9 plows
10 rubber tires
11 silk goods
12 woolen goods



Photograph by Ewing Galloway, N.Y.

Figure 457. A group of factories at Edgewater, New Jersey, across the Hudson River from New York City. This picture shows how industrial plants tend to cluster together in places which are favorable for manufacturing. Give several reasons for the fact that so much manufacturing is centered in and near New York City.

3. The Distribution of Manufacturing Centers

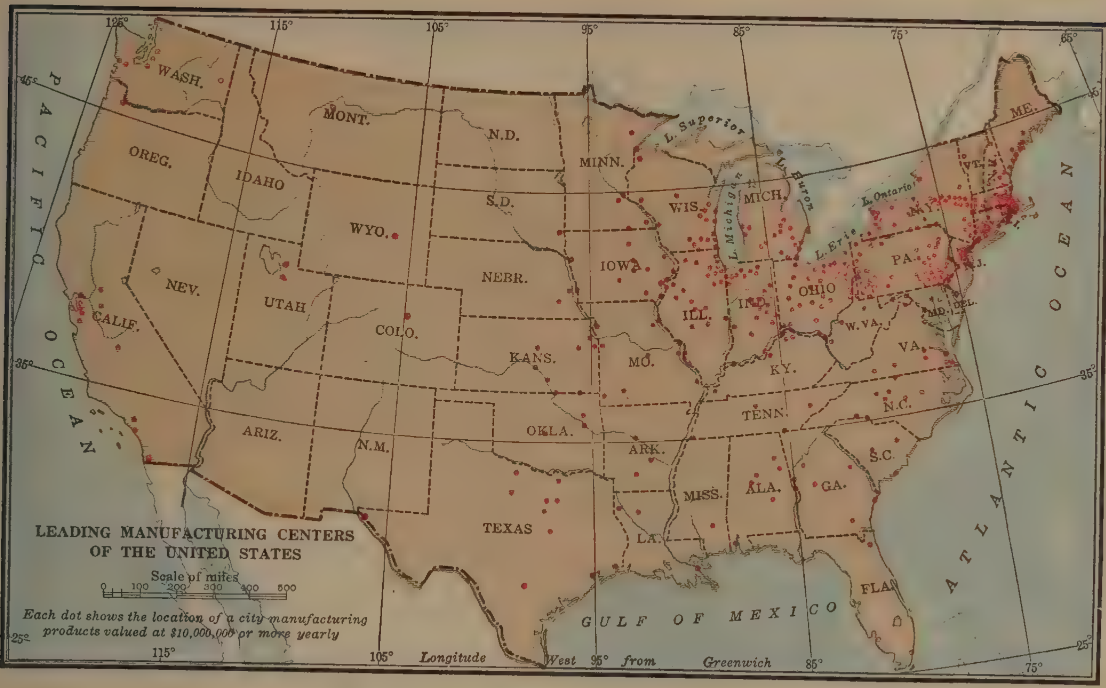
Figure 458 shows the distribution of the manufacturing centers of the United States. Notice that each dot stands for a city where ten million dollars' worth or more of manufactured products are turned out each year, and that in certain places the dots are so close together that they form a solid mass. Such a map does not, of course, show us the relative importance of the manufacturing cities, but it does show the sections where most of our manufacturing is carried on. What sections clearly lead in manufacturing? How do you explain their leadership?

The northeastern manufacturing section. The northeastern manufacturing section of the United States includes southern New England, central and eastern New York State, New Jersey, eastern Pennsylvania, Maryland, and Delaware. This is the part of the country where manufacturing first developed. Within it are four of the twelve cities of our country which rank highest in value of manufactures, and scores of other busy industrial cities.

New York City produces manufactured goods valued at more than five billion dollars a year, and is our greatest manufacturing city. Philadelphia ranks third with nearly two billion dollars' worth of manufactures yearly; and Baltimore and Boston, each with manufactures valued at more than half a billion dollars, rank seventh and tenth.

You have learned how water power gave New England its start in manufacturing. Farther south in the northeastern manufacturing section is the anthracite coal of eastern Pennsylvania, and the bituminous coal of the Appalachian Plateau is not far distant. Power resources, combined with forests and nearness to the sea, have made this northeastern section one of the greatest manufacturing districts of the whole world. Excellent railroad and steamship service makes it possible for the cities to obtain raw materials from near and far, and to distribute finished products to all parts of the United States and to distant parts of the world. *See Figure 457.*

The north-central manufacturing section. This section includes the northern part of


125°
115°
105°
95°
85°
75°
65°
45°
35°
25°
PACIFIC OCEAN
WASH.
OREG.
CALIF.
NEV.
IDAHO
MONT.
WYO.
UTAH
ARIZ.
COLO.
N.M.
N.D.
S.D.
NEBR.
KANS.
OKLA.
TEXAS
MINN.
IOWA
MO.
ARK.
LA.
WIS.
ILL.
MICH.
IND.
OHIO
KY.
TENN.
MISS.
ALA.
GA.
FLA.
S.C.
N.C.
VA.
W.VA.
MD.
DEL.
PA.
N.J.
N.Y.
VT.
ME.
L. Superior
L. Michigan
L. Huron
L. Erie
L. Ontario
GULF OF MEXICO
ATLANTIC OCEAN
Scale of miles
0 100 200 300 400 500
Longitude West 95° from Greenwich

LEADING MANUFACTURING CENTERS OF THE UNITED STATES

Each dot shows the location of a city manufacturing products valued at $10,000,000 or more yearly

Figure 458. Manufacturing centers of the United States.

the Appalachian Plateau, and the part of the Central Plains extending from the Great Lakes on the north to, and including, the Ohio and Missouri river valleys on the south and southwest. Within it are seven of our twelve leading manufacturing cities. First comes Chicago, which, with manufactures valued at about three and a half billion dollars a year, is our second greatest manufacturing city. Then come Detroit and Cleveland, each turning out more than a billion dollars' worth of manufactured products yearly, and then St. Louis, Buffalo, Milwaukee, and Akron. Pittsburgh, which is also in this section, ranks thirteenth among our manufacturing cities. The cities named are simply the leaders in this section; as Figure 458 shows, there are many others which are important manufacturing centers.

This north-central industrial section lacks the advantage of seaboard location, but it has many other advantages for manufacturing. It produces large quantities of agricultural raw materials and has an abundance of coal. Certain parts of it produce petroleum and natural gas. A network of railroads connects it with the East, the South, and the West, and the Great Lakes form a wonderful highway of transportation along its northern margin. Iron ore is obtained easily from the iron-mining districts near Lake Superior, especially by the cities on the lake shores. Last, but not least, it is a prosperous section with many cities and towns, and therefore offers large markets for manufactures. *See Figure 459.*

The southern manufacturing section. Manufacturing in mills and factories began somewhat later in the South than it did in the northeastern part of the country. During the last fifty years, however, manufacturing has developed rapidly in the Southern States. This section has excellent water power in many places, and abundant coal or oil in others, and it produces valuable raw materials such as iron ore, lumber, cotton, and tobacco. Most parts of it are within easy reach of the sea, and like the sections farther north, it is served by a network of railroads.

You have already learned of the development of cotton-manufacturing in the Southern Piedmont, and of the growth of the iron-and-steel industry in the Birmingham district. Other industries of great importance are tobacco-manufacturing in the tobacco-growing region of Virginia and North Carolina, and oil-refining in Texas and the other Southern States west of the Mississippi. Taking the southern manufacturing section as a whole, the leading industrial cities are Richmond, New Orleans, Atlanta, Fort Worth, Houston, and Dallas.

The Pacific coast manufacturing section. A fourth manufacturing section of our country lies along our Pacific coast. Not until recent years have the people on the western coast undertaken manufacturing on a large scale, but already Los Angeles ranks eleventh among our industrial cities. One of its greatest industries is the making of moving pictures.

Farther north, San Francisco and other cities on San Francisco Bay form a very important industrial district. Still farther north, Portland, on the Willamette River in Oregon, is an important manufacturing city, and Seattle, Tacoma, and other cities on Puget Sound form another busy industrial district.

The cities on the Pacific coast have many advantages for manufacturing. They are near the greatest forests of our country, and they are well supplied with fuel,— good coal in the Northwest and vast quantities of petroleum in California. Population is increasing rapidly, providing larger and larger home markets for manufactures. The few but large and excellent harbors make trade with foreign countries easy. The Pacific Ocean provides a highway of transportation to Asia, Australia, and the west coast of South America, and the Panama Canal has greatly shortened the sailing distances to ports on our Atlantic coast, the east coast of South America, and the western coast of Europe.

The United States the greatest manufacturing country. For many years the United States was chiefly an agricultural country, but the steady growth of manufacturing in the last seventy-five years has made us the greatest manufacturing country of the world. In 1850 our mills and factories turned out finished products worth about a billion dollars and provided work for less than a million people. Today our manufacturing plants are turning out about sixty billion dollars' worth of finished products a year and are providing employment for nearly ten million people.

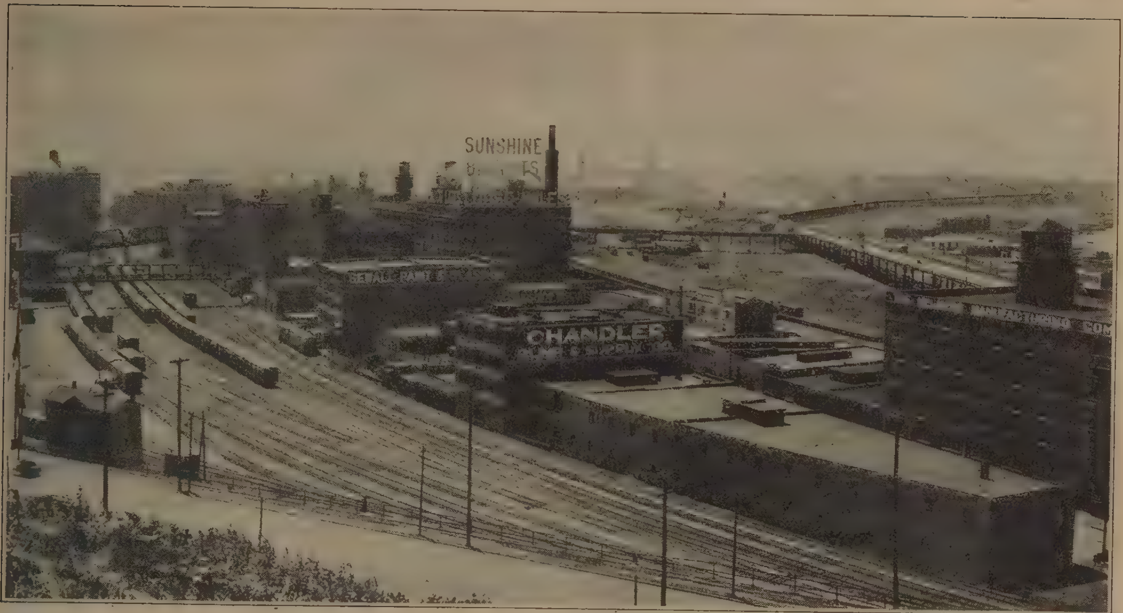
For a long time Great Britain led the world in manufacturing, but the value of the manufactured goods now produced in the United States is about four times as great as the value of the products of British mills and factories. Germany, France, and Belgium are also great manufacturing countries, and together with Great Britain they form the second greatest manufacturing region of the world.

Reasons for our success in manufacturing. About one third of the world's manufacturing is done in our country. Our success in manufacturing has not been due to chance, but to the combination of many conditions which have favored industrial growth. The more important of these conditions are given below:

1. The United States is unusually well supplied with resources

(*a*) coal, oil, natural gas, and water power;
(*b*) iron, copper, and other metal resources;
(*c*) forests of the most useful kinds of trees;
(*d*) well-watered, fertile farm land level enough for the use of agricultural machinery.

2. The climate is such that it makes possible the production of a large variety of crops and favors health and energy among the people.



Photograph by Ewing Galloway, N.Y.

Figure 459. A view of part of the busy industrial district of Kansas City, Missouri. This city and its neighbor, Kansas City, Kansas, form one of the leading manufacturing centers of the Central Plains. At the right you can see the intercity viaduct, a long elevated boulevard which connects the two cities.

3. Our nation has grown up during the period of the world's history when the greatest scientific discoveries and mechanical inventions have been made. The older nations of the world grew up before the days of modern improvements, and having become accustomed to old-fashioned ways, they have been somewhat slower to adopt new methods of doing work than have the people of the United States.

4. The United States is a large country, with a population of about 120 millions, and therefore there are large home markets for manufactured goods.

5. Our standards of living are high, and we purchase many luxuries in addition to necessities. Our workers receive high wages and therefore make good customers.

6. The location of our country is such that it is easy for us to obtain raw materials from distant lands and to ship manufactured goods to all the markets of the world.

An industrial test. Below is a list of the ten states of our country which lead in value of manufactured products. After each state its leading manufactured products are given. Locate each state on Figure 458, and tell why it is a leader in the manufacture of the products named.

New York State: clothing; newspapers, magazines, and books.

Pennsylvania: iron and steel; silk manufactures.

Illinois: packing-house products; books, newspapers, and magazines.

Ohio: iron and steel; tires and inner tubes.

Michigan: motor vehicles; motor-vehicle bodies and parts.

New Jersey: petroleum products; refined copper.

Massachusetts: cotton goods; woolen and worsted goods.

California: petroleum products; canned and preserved fruits and vegetables.

Indiana: iron and steel; motor vehicles.

Wisconsin: butter, cheese, evaporated and condensed milk; motor vehicles.

Ten leaders. Table 29 on page 516 gives a list of the cities of our country which turn out, on the average, more than a hundred million dollars' worth of manufactured products each year. Make a graph showing the comparative value of the manufactures of each of the ten leading manufacturing cities.

When you have completed your graph, locate each of the ten leading manufacturing cities on the map on pages 484–485 and answer the following questions about them:

1. Which four of these cities are seaports? 2. What special advantages have they for manufacturing? 3. Which one of the four is our greatest manufacturing city? 4. What reasons can you give for its leadership?

5. Which five of the ten leading manufacturing cities are lake ports? 6. What special advantages have they for manufacturing? 7. Which one of them is our second greatest manufacturing city? 8. Why has it become such an important industrial center?

9. Which one of the ten leading manufacturing cities is located near the junction of the Mississippi and Misssouri rivers? 10. What reasons can you suggest for its importance as an industrial center?

A summary. Sum up the reasons why the United States has become a great manufacturing country by completing the sentences below:

1. The farm lands, grazing lands, forests, and mines of the United States provide large quantities of raw materials for manufacturing.

2. Among these raw materials some of the most important are ______________________.

3. The United States has an abundance of coal, petroleum, and natural gas to supply power for manufacturing.

4. It also has many rivers suitable for the development of hydroelectric power.

5. Its population is large, providing abundant workers for mills and factories and large home markets for manufactured goods.

6. It is covered with a network of railroads which make it possible for manufacturers to obtain raw materials from many sources and to market manufactured goods easily.

7. Its location is such that it is easy to carry on trade with foreign countries. This makes it possible for manufacturers to obtain raw materials from distant lands and to market manufactured goods in all parts of the world. Among the raw materials obtained from distant lands are ____________________.

X. TRAVEL, TRANSPORTATION, AND COMMUNICATION

Foreword. Great improvements in means of travel, transportation, and communication have come during the period of rapid growth of manufacturing in this country. Railroads, good roads, automobiles, and motor trucks have been of great help to manufacturers. Increase in manufacturing, in turn, has played a large part in the development of systems of transportation in the United States.

Improved means of communication, such as the mail service, the telegraph, the telephone, and the radio, have come while we have been developing manufacturing industries and improving our means of transportation. We have become so accustomed to using modern methods of communication that we should find it hard indeed to get along without them.

The United States has more miles of railroads and of good roads than any other country. As a people we use more automobiles and telephones than any other nation. As you study this chapter, try to find out why we have developed such excellent means of travel, transportation, and communication, and how they have helped to increase our prosperity.

Work for the class as a whole. As you study this chapter, collect pictures of old and new means of transportation and communication in this country. Arrange them in historical order, and mount the best ones for exhibition.

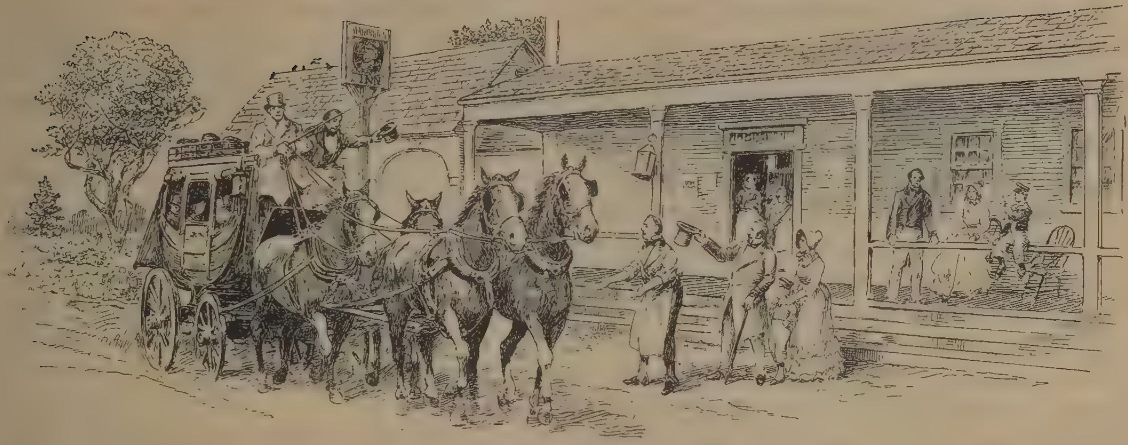


Figure 460. An old-time stagecoach leaving an inn. Often one passenger rode on the "box" with the driver; the other passengers rode inside. The coaches had no springs, and they rocked and jolted as they sped over the rough, stony roads. They stopped overnight at inns which were located along the main highways.

1. BEFORE THE DAYS OF RAILROADS

After the landing of the Pilgrims at Plymouth, more than two hundred years passed before a railroad was built in this country. How did the early settlers travel when they went on journeys? What improvements in means of travel and transportation were made before the days of railroads?

Trails of the Indians and pioneers. The early settlers found their way through the thick forests of the eastern half of the country chiefly by following Indian trails. Later, explorers and pioneer settlers marked out trails across the grassy plains, over the mountains, and through the deserts to the Pacific coast. Some of the trails followed rivers. Those in the mountains led over passes, and those in the deserts led from one spring or water hole to another.

The Indians and the early pioneers succeeded in avoiding the places where travel was most difficult, and many of their trails have proved to be the best routes for roads and railroads. Do you know of any present-day automobile routes which follow pioneer trails of long ago?

Before the trails were widened into roads, people who wished to go inland to places which could not be reached by water traveled on foot or on horseback, often leading pack animals loaded with their baggage. In the early days of migration across the Appalachian Highlands into the Central Plains, almost every party of pioneers used pack animals to carry such of their belongings as they could take to their new homes.

From trails to roads. After wheeled vehicles came into use in the cities and towns along the coast, people wished to travel inland in wagons and coaches. Then the trails were widened into roads. The early roads were rough and stony; and after a rain very muddy. There were few bridges, and streams that were not too deep were forded — that is, the horses pulled the wagons and coaches through the water. Where well-traveled roads crossed larger streams, there were ferrymen who took the vehicles from one bank to the other on rafts.

It was over a hundred years after the Pilgrims settled at Plymouth before there were many carriages in this country. In 1697 Philadelphia possessed "thirty carts and other wheeled vehicles," and New York had about the same number. Connecticut had no carriages until about 1750, and very few until after the Revolution. As time went on, however, more and more people traveled in public or private coaches, and wagons took the place of pack animals in carrying goods in the better-settled parts of the country.

Early carriages and stagecoaches. The early carriages for passenger travel were called coaches, and those which were public were known as stagecoaches. They were high and clumsy and would have been uncomfortable to travel in even if the roads had been good, but they were brightly painted and made a gay appearance. At first they were drawn by two horses; but as roads were improved and people demanded more speed, four or even six horses were used for the stagecoaches. *See Figure 460.*

By 1770 the main roads between the larger settlements near the coast had been improved enough to make travel by coach fairly common, and for the next sixty years stagecoaches were the best means of passenger travel. Except where there were waterways, wagons which followed the stagecoach routes were the best means of transporting freight.

Overland from Boston to New York. The first highway completed between Boston and New York was called the Boston Post Road. Before 1800 "express service" by stagecoach was provided over this road for mail and for passengers whose business was so important that they could not put up with delay. This service is said to have "whirled the traveler to New York in three days and a half." Motor busses now make the trip between Boston and New York in ten hours, and express trains take less than six hours.

The following description written by Josiah Quincy, who was president of Harvard College from 1829 to 1845, pictures the discomforts of a journey from Boston to New York:

"The carriages were old and shackling, and much of the harness of ropes. We reached our resting place for the night, if no accident intervened, at 10 o'clock, and, after a frugal supper, went to bed with a notice that we should be called at three, which generally proved to be half-past two, and then, whether it snowed or rained, the traveler must rise and make ready, by the help of a horn lantern and a farthing candle, and proceed over bad roads, sometimes getting out to help the coachman lift the coach out of a quagmire or a rut." [1]

Overland from New York to Philadelphia. Travel over this route in the days of stagecoaches required crossing the Hudson River by ferry to the "Jersey side," then driving to the east bank of the Delaware River, and ferrying across to Philadelphia. The early stagecoaches took several days to make this journey. In 1771 an enterprising stage-driver managed, by changing his horses several times during the trip, to reduce the time to a day and a half. His coach was called "The Flying Machine." Today a man in New York City can telephone to a friend in Philadelphia and say, "I will take the next train and be with you in two hours."

The covered wagon. In the latter part of the eighteenth century the "Conestoga wagon" began to be used in Pennsylvania. It was so called because it was first made in the Conestoga valley, west of Philadelphia. It was a four-wheeled wagon, large and strongly built, and it could carry several tons. Often it was painted in bright colors, and to protect the load and the passengers it was roofed with white cloth stretched over an arched framework. This "covered wagon" became very popular and remained in use for many years.

"No sooner was a road made fit for vehicles than the Conestoga wagon appeared upon it, sometimes in solitary grandeur as its owner and his family and household goods moved

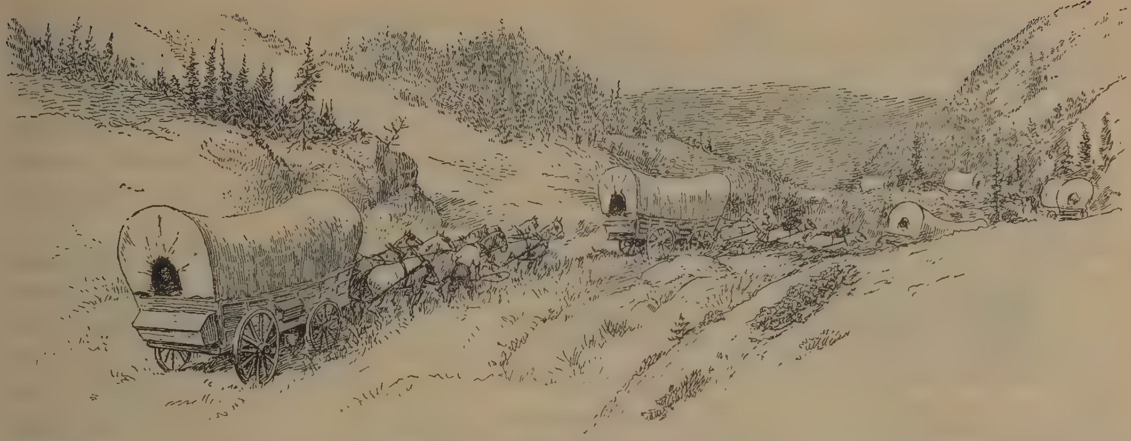


Figure 461. **A caravan of covered wagons on the way to the West. In the early days of westward migration the pioneer settlers often traveled in large companies. Each family had its own covered wagon, which was heavily loaded with household goods and in which the women and younger children rode during the journey.**

slowly over hill and valley toward a new home to the westward; sometimes in immense and brilliant caravans that stretched for miles along the highway. There was majesty in their slow progress. . . . They were the frigates of the land."[1] *See Figure 461.*

The westward extension of roads. In the hilly and mountainous parts of the East the surface of the land made road-building difficult; and where rivers could be used for travel and transportation, road-building was postponed for some time. But in the gently rolling Central Plains the surface encouraged road-building, and little by little wagon roads were extended across this region.

By 1800 it was possible to go by road from the Atlantic coast to the Mississippi River, but farther west roads were very few and very poor until after the California gold rush. Since then many roads have been built across the Great Plains and the Western mountains and plateaus to the Pacific coast.

The surface conditions of our country still influence road-building. Today there are many more miles of good roads in the interior plains than in equal areas in the mountainous regions of the eastern and western parts of the country.

Road study. Try to get an automobile road map of your state. Study the pattern of the highway system and see if you can discover how the building of roads has been affected by the surface of the land.

Inland travel by water in the early days. Both the Indians and the early settlers made much use of the streams for inland travel. Where the distance between streams was not great, there were short trails called portages over which canoes could be carried easily from one river to another. The early settlers followed the example of the Indians in using canoes, and much of the early exploration was carried on in these simple boats.

Later, when people began to migrate westward, they built large flat-bottomed boats, such as the one shown in Figure 350, for travel downstream on the rivers. Flatboats also came to be used in large numbers for the transportation of freight down the Ohio and Mississippi rivers as the Central Plains were opened up for settlement. After the invention of steamboats the flatboats gradually passed out of use.

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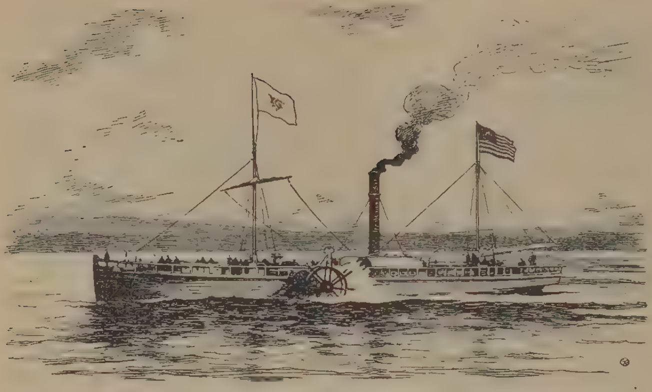

Figure 462. The *Clermont*, Robert Fulton's little steamboat. The boat was 130 feet long, and the power to turn the paddle wheels was furnished by a steam engine built by James Watt.

Inland navigation by steamboat. As early as 1785 John Fitch, of Connecticut, who was then living in Philadelphia, built a boat that ran by steam power. Other men were experimenting along similar lines, and in the course of the next twenty years a few steamboats were run with fair success on the Potomac, Delaware, and Savannah rivers.

In 1807 Robert Fulton built a steamboat named the *Clermont*, which made a trial trip from New York City to Albany, a distance of about 150 miles, in thirty-two hours. As a result of the success of this trip the *Clermont* became the first steamboat in the world to operate regularly as a public carrier of passengers and freight. *See Figure 462.*

Soon other steamboats appeared, and by 1820 steamboats were in use on many of the larger navigable rivers east of the Appalachian Mountains, and on the Ohio and Mississippi rivers. Steam navigation on the Ohio and the Mississippi helped greatly in the settlement of the Central Plains. The Ohio River soon became one of the busiest highways of travel and transportation in the entire country; for it led westward to the Mississippi, and from its mouth boats could go upstream or downstream on that great river. The building of railroads put an end to most of the passenger travel on the rivers, but much freight is still transported on the Ohio and Mississippi rivers. The boats on these rivers carry chiefly bulky products, such as grain, cotton, sugar, coal, iron and steel, stone, sand, and gravel.

The Great Lakes as an inland waterway. The Great Lakes form one of the best inland waterways in the world. They were used very early by the French explorers, who reached them by way of the St. Lawrence River. In 1818 the first steamboat made its appearance on Lake Erie, and from that time on many pioneer settlers from the Atlantic coast and many immigrants from Europe made their way westward to new homes in the upper Mississippi Valley by the Great Lakes route.

Today large quantities of bulky products, such as iron ore, coal, grain, and lumber, are transported in freighters on the Great Lakes, and large passenger boats run between the more important cities on the lake shores. What large cities can you name which owe their growth in part to the fact that they are ports on the Great Lakes?

The Erie Canal. In 1825 the opening of the Erie Canal across New York State from Albany to Buffalo provided a waterway from the Hudson River to Lake Erie. This made it possible for people to travel and goods to be shipped all the way from New York City to the Central Plains by boat.

The Erie Canal made the journey from the Atlantic coast to the Central Plains much easier for travelers, and it soon became of great importance in shipping farm products eastward from the new farm lands in the upper Mississippi Valley. It also provided the best means of shipping manufactured goods from the East to the farming centers of the Central Plains. *See Figure 463.*

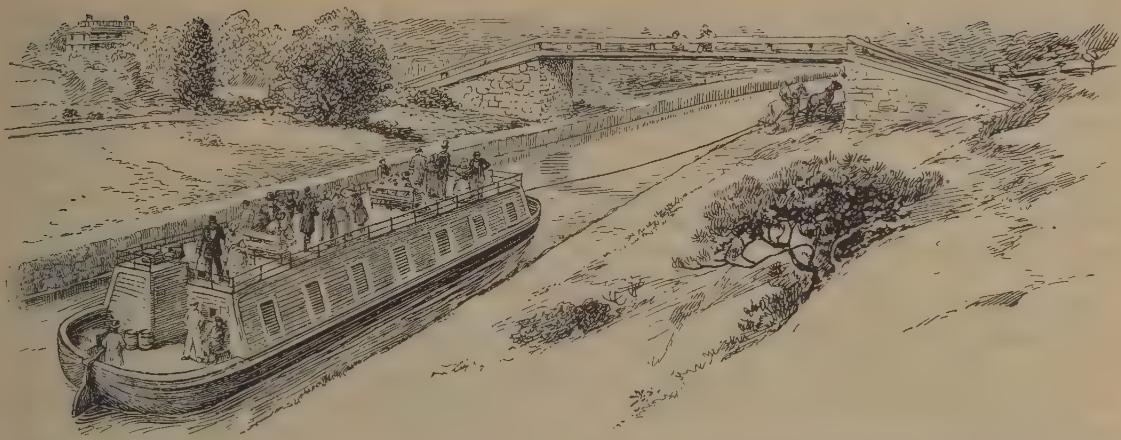

Figure 463. Passenger travel on the Erie Canal a hundred years ago. All the canal boats were drawn by horses which were driven along the towpath, and their speed was three or four miles an hour. The canal was about forty feet wide, and the freight boats could carry about as much as our modern freight cars.

The building of railroads across New York State along the route of the Erie Canal caused a gradual decrease in the use of the canal until, at last, it was abandoned. Today a deeper and wider canal follows the old "canal belt." It is known as the New York State Barge Canal and is used only for the transportation of freight.

Other canals. Wishing to be in a position to compete with New York State in providing transportation to the Central Plains, the people of Pennsylvania built a series of canals and portage railroads from Philadelphia to Pittsburgh. This route was opened in 1834, and in 1835 the Pioneer Fast Line advertised that it would "rush its passengers through from Philadelphia to Pittsburgh in five days." Today one may travel by train from Philadelphia to Pittsburgh in eight hours.

In 1828, twenty-nine years after George Washington died, construction on a canal which he had suggested was begun. It was known as the Chesapeake and Ohio Canal and was to connect Washington with the Ohio River. On July 4, 1828, President Adams referred to this project with great enthusiasm in a public address at Washington. His belief in its permanent success is especially interesting, for as he spoke work on the Baltimore and Ohio Railroad was being started at Baltimore, only forty miles away. Few people of that day dreamed that railroads were soon to become competitors of the canals and would nearly drive them out of business. The builders of the Chesapeake and Ohio Canal met with great difficulties, and it was twenty-two years before the canal reached Cumberland, Maryland. By that time the Baltimore and Ohio Railroad had proved so successful that work on the canal was given up.

Canal-building was by no means confined to the East. As the Central Plains were settled, there were increasing demands for water routes between the Great Lakes and the Ohio and Mississippi rivers. As a result, canals were built across Ohio and Indiana connecting Lake Erie with the Ohio River. Another canal, connecting Chicago with the Illinois River, provided an unbroken waterway from Lake Michigan to the Mississippi.

The effect of railroad-building on canals. The United States has an unusually good system of navigable inland waterways, but with the exception of the Great Lakes and the

Ohio and Mississippi rivers, little use is made of them today. Most of the canals have fallen into disuse because the railroads now provide much faster means of travel and transportation. For a time during the early period of railroad-building, the canals were able to hold their own, but in the end the railroads took away practically all their business.

Some things to explain. Complete each sentence below by giving a full explanation:

1. In the early days of settlement all inland travel was on foot or on horseback or on the rivers because ....

2. In time some of the trails were widened into roads because ....

3. Road-building was easier in the Central Plains than in many parts of the East because ....

4. Travel in the stagecoach days was slow and uncomfortable because ....

5. The Ohio River and the Great Lakes were a great help in the settlement of the Central Plains because ....

6. The westward movement of population led to the building of canals because ....

7. After a period of great prosperity most of the canals gradually fell into disuse because ....

2. THE GREAT PERIOD OF RAILROAD-BUILDING

In the early part of the nineteenth century, when wagon roads were being extended farther and farther west and canal-building was at its height, the building of railroads began. Charles Carroll, who turned the first sod for the Baltimore and Ohio Railroad in 1828, believed this to be the second most important act in his life, outweighed in importance only by his signing of the Declaration of Independence, fifty-two years earlier. Few people, however, had the slightest idea what the "iron horse" was to mean to our country.

We may think of the years 1830–1900 as the great period of railroad-building. It was a period during which the development of industries of all kinds went forward so rapidly that the United States came to be one of the leading countries of the world, and in this development the railroads played one of the most important parts. They opened up more and more of the country for settlement; they served the farmer, the ranchman, the miner, the lumberman, and the manufacturer; and they made it possible for the people of the most widely separated sections to exchange products and ideas freely. Today the United States has a little more than one third of all the miles of railroad tracks in the world. Turn to Table 30 on page 517 and find out how the railroad mileage has increased since 1830.

As you study this section, watch for answers to the following questions:

1. What geographic conditions have influenced railroad-building in the United States?

2. What special reasons are there for the great railroad traffic of the United States?

3. How have railroads contributed to the growth and prosperity of the country?

The early railroads. The first railroads were exactly what the name indicates — roads with rails laid on them. The rails, or tracks, were of wood, the cars were simply stagecoaches with wheels made to fit the rails, and horses did the pulling. Iron bands were first placed on the wooden rails of a roadway at Quincy, Massachusetts, in 1826, but no solid iron rails were used until the year 1844.

The first locomotives. In 1830 the first American-built locomotive drew a train of cars over the first thirteen miles of the Baltimore and Ohio Railroad, making the trip without mishap. Later in the year this locomotive, which was called the "Tom Thumb," raced a horse-drawn car. They raced on parallel tracks, and at first they kept up the same speed; then the "Tom Thumb" went ahead, and the passengers in the car behind it cheered and waved their hats as they passed the people in the horse-drawn car. But before the race was over, something went wrong with the engine, and the horse won.

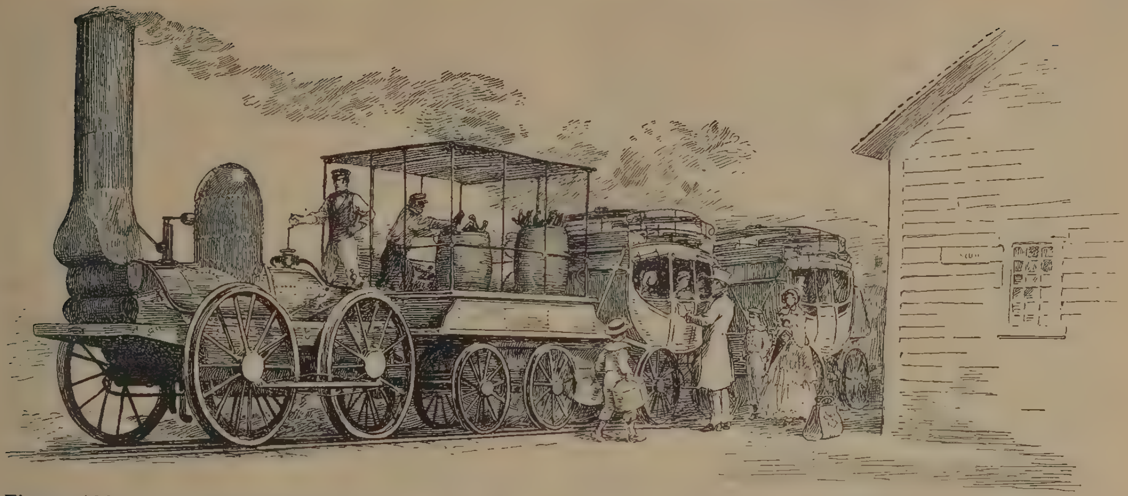

Figure 464. One of the first steam trains. Notice that the passenger cars were built like stagecoaches. The early locomotives burned wood, and what we now call the coal car was a wagon large enough to carry several barrels of wood. The wood burned so fast that fresh supplies had to be taken on frequently.

The first locomotives were great curiosities, and many people were afraid of them. There was no doubt that they could draw the cars, but the speed of fifteen miles an hour was frightening, and the engines sometimes blew up. Moreover the smoke was dirty, and sparks from the engine often burned the hats and clothing of the passengers. In 1831, on a railroad in South Carolina, a special car loaded with bales of cotton was placed just behind the engine to protect the passengers in case the engine blew up. *See Figure 464.*

A ride behind one of the first locomotives. The following account of a ride behind one of the first locomotives has come down to us:

"The fuel of the engine . . . was wood, and the smokestack soon began to belch forth big blazing sparks. These fell among the passengers. The damage done by them in the three covered coaches was not extreme, but the havoc they created on the crowded flat cars was sad indeed. Many of the travelers on the rear cars had carried their umbrellas, and those so equipped raised them for protection against the clouds of smoke and rain of fire. As a consequence all the umbrellas were soon in flames and were thrown overboard. Then the clothing of the passengers — a considerable number of whom were women — became ignited by the hot coals, and in a very little while the whole moving company resolved itself into a volunteer fire brigade, each member . . . trying to extinguish the conflagration in his neighbor's apparel."[1]

The first twenty years of railroad-building. In spite of the difficulties with the early locomotives, railroad-building increased rapidly. Steam engines were improved, and travel by train soon became much safer and more comfortable. By 1840 there were 2818 miles of railroads in operation, and by 1850 the mileage had increased to more than 9000.

During the first ten years of railroad-building short lines were built in most of the states along the Atlantic coast. These lines centered in the larger cities, and extended out into the surrounding country. The Baltimore and Ohio Railroad was pushing westward from Baltimore, and in 1835 a branch connected

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Baltimore with Washington. Farther south, a railroad 137 miles in length running from Charleston to Hamburg, in South Carolina, was the "first long railroad in the world."

Philadelphia became the first railroad center of Pennsylvania, with one line running northward to New York City, another southward to Baltimore, and a third westward to the coal fields. New York City and Albany were centers of railroad-building in New York State, and several short lines were constructed between various towns along the Erie Canal route, between Albany and Buffalo.

The year 1835 saw the opening of three railroad lines reaching out from Boston: one to Lowell, another to Worcester, and a third to Providence. By 1842 a through line from Boston to Albany was completed, connecting the eastern end of the Erie Canal with the Atlantic coast. By 1850 there was a continuous line of railroad from Portland, Maine, to Wilmington, North Carolina, and railroads were beginning to be built in the northeastern part of the Central Plains.

1850–1860. The ten years from 1850 to 1860 was a period of tremendous growth in railroad-building, and the miles of track increased from 9000 to more than 30,000. In 1851 the last gap in the railroad from Albany to Buffalo was filled, and through railroad connection between Boston and Montreal was completed. In 1852 an all-rail route from Philadelphia to Pittsburgh was put into operation, and in 1853 the Baltimore and Ohio Railroad reached the Ohio River at Wheeling. In the meantime railroad-building had been progressing rapidly in the Central Plains, and by the year 1857 a passenger could travel all the way from the Atlantic coast to the Mississippi River by train.

From coast to coast. After the gold-seekers found their way overland to California and people began to settle on the Pacific coast, there came a strong demand for a transcontinental railroad. An undertaking so great as that needed the support of the national government, and it was some years before that support could be obtained. The plan was to build the railroad westward from Omaha and eastward from San Francisco.

On July 4, 1862, President Lincoln signed a bill which provided for the construction of this first transcontinental railroad which was to connect the Atlantic coast with the Pacific. Work was soon begun westward from Omaha and eastward from San Francisco according to the plan. The last spike was driven on May 10, 1869, at Promontory Point, Utah.

"Finally the morning of the appointed day arrived, and between the rails that stretched to the Atlantic Ocean and those which extended to the Pacific there remained a gap of about one hundred feet. All the ties were in place save at the center of the gap, where the space designed for one wooden cross-piece remained unoccupied. Then, simultaneously, the Orientals from the West and the Caucasians from the East advanced toward each other, placing the missing links of steel. At their heels followed the spectators, edging forward step by step. Some six hundred people composed the throng, which included white Americans, Irish workmen, Chinese in blue blouses, negroes, and Mexicans in tall sombreros. There was also a little group of Indians. The last tie — a piece of laurel-wood from California — was put in position, and the last two rails were laid. One was fastened down with its full complement of ten iron spikes and the other with seven.

"Then Nevada presented a spike of silver which was driven home, and Arizona gave her like offering made of iron, silver and gold. But one more spike remained — the 'last spike' of gold — and it was . . . given by California."[1]

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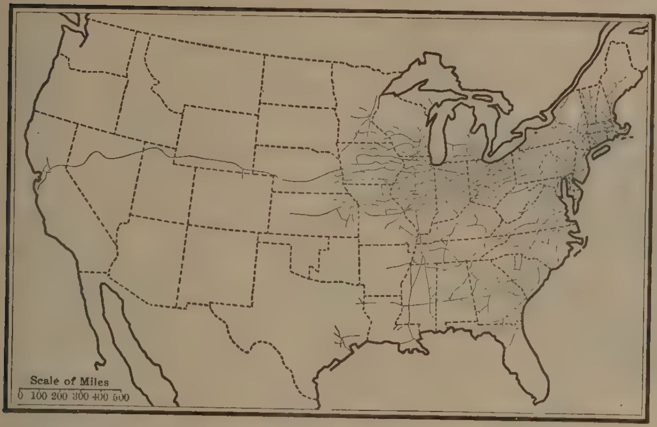


Figure 465. The railroads of the United States in 1870.

Progress from 1870 to 1890. By 1870 there was a network of railroads covering New England, the Middle Atlantic States, and the states of Ohio, Indiana, and Illinois. There were also a good many railroads in the Southern States, a few west of the Mississippi, and the one transcontinental line. All together the railroads totaled about 53,000 miles. *See Figure 465.*

By 1890 there were over 156,000 miles of railroads in the country. Five great trunk lines extended to the Pacific coast, and others were being constructed. The railroads of the Southern States had been multiplying, and the general network of lines in the eastern part of the country had spread westward to the margin of the Great Plains.

The thickly settled part of the United States was, by this time, well provided with railroads; the western half did not have so many, but railroads reached all the larger cities of the West, and from the railroads stagecoach lines carried travelers to the smaller places. *See Figure 466.*

How surface affected railroad-building. In New England and throughout the Appalachian Highlands railroad-building was difficult because of the hilly and mountainous surface. Railroad-builders therefore chose the river valleys for the railroad routes, because even though such routes were winding, they provided the easiest grades. Where it was necessary, tunnels for railroads were dug through the mountains.

When railroad-building began in the broad and nearly level plains of the interior of the country, the engineers had an easier time. They could lay out straight lines of tracks for many miles, and there was much less need for cutting through hills and filling in hollows than in the East. Thus, on the whole, the "railroad pattern" of the interior plains is one of fairly straight lines in contrast to the more curving lines of the East.

The West, with its high mountain ranges, has offered many difficult problems for railroad-builders, such as the construction of long tunnels through the mountains and the building of high steel bridges over river gorges. These problems have been solved successfully by engineers, and the West is now provided with railroads which amply meet its needs.

Railroad-building since 1890. The building of railroads has continued since 1890, but not so rapidly as in earlier years. We now have

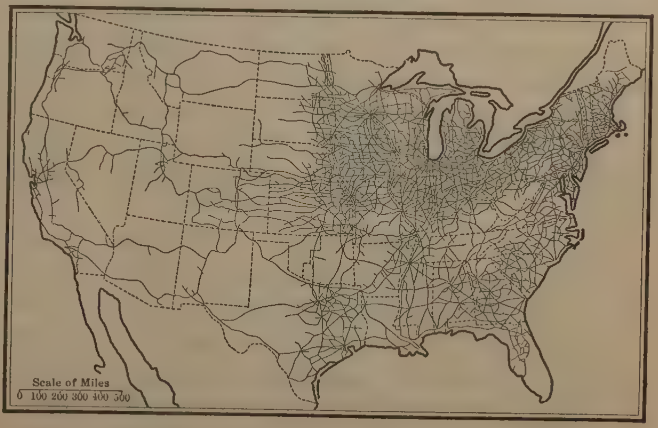


Figure 466. The railroads of the United States in 1890.

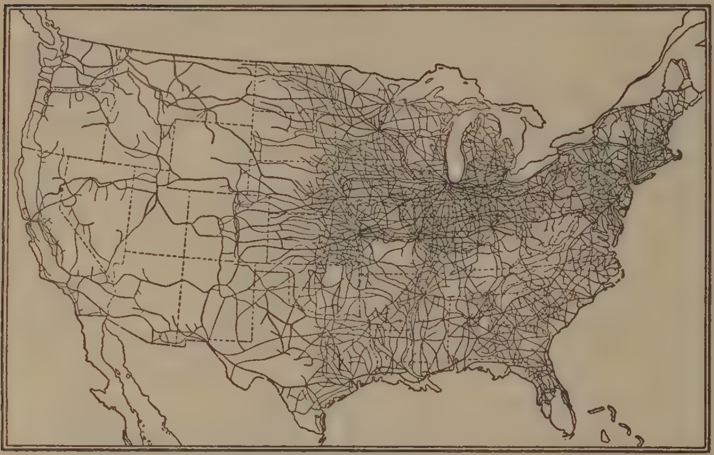


Figure 467. The railroads of the United States at present.

nearly 260,000 miles of railroads, and further extensions are not greatly needed. This is chiefly because automobiles, motor busses, and motor trucks have come into such common use. Many of the short branch lines of the railroads have been withdrawn from use, and motor vehicles are being used for the "short hauls." People are traveling so much by automobile that passenger traffic on the railroads has decreased steadily in the last few years, and the railroads depend largely on their freight business for their profits.

It is not likely that we shall see much increase in our railroad mileage in the future, and, in fact, we shall probably see a decrease in the mileage operated, or used. Airplane transportation for passengers, mail, and small-package freight is increasing every year, and some people believe that in the future our railroads will be used chiefly for carrying bulky freight.

Figure 467 shows the network of railroads which covers our country today. Compare that map with Figures 465 and 466.

Why we have built so many railroads. One reason why we have more miles of railroads than any other country is that the United States is one of the largest countries of the world. Another is that our country has grown up during the years when first steam power and then electric power have come into general use.

Perhaps the most important reason of all is that we have such an abundance of natural resources. As you know, we use more coal than any other nation. Coal alone provides huge quantities of freight for the railroads, for it must be distributed from the mines to all the places where it is used in homes, factories, office buildings, public buildings, and power plants. Metal ores, which we produce in large quantities, must be carried from the mines to the smelters, and the metals must be carried from the smelters to workshops and factories.

Our wealth of coal, oil, natural gas, and metals has led to the development of great manufacturing industries, and these, in turn, have called for a network of railroads by means of which raw materials can be secured and manufactured goods distributed. Our farms and ranches produce great quantities of foodstuffs and raw materials which demand wide distribution, and our forests furnish large quantities of wood which must often travel long distances to the places where it is used.

Finally, we must remember that the people of our country have, as a whole, had money enough to travel widely, and this has greatly increased the passenger business of the railroads. As we have seen, passenger travel by train is now decreasing, but for many years it played an important part in the growth of our railroad systems.

Shall we need railroads in the future? The great period of railroad-building has closed, but we shall undoubtedly need railroads for many years to come, and perhaps

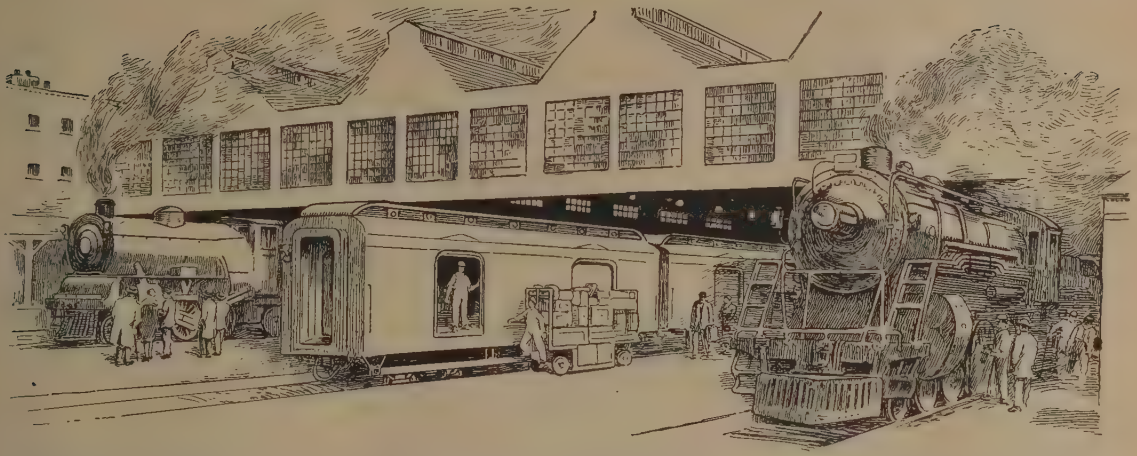


Figure 468. A glimpse of a modern railroad terminal. The great locomotives are steaming up, ready to pull long trains of passenger and baggage cars over the steel rails at speeds of forty to sixty miles an hour. Passengers ride comfortably in coaches, parlor cars, and sleeping cars, and eat their meals in dining cars.

always. At present we know of nothing that will take their place in transporting large quantities of bulky freight over long distances at the speed which we require. Unless transportation by air develops beyond anything that we foresee today, the railroads will always be needed for this purpose. *See Figure 468.*

Giving reasons. Complete each sentence below by giving reasons.

1. Many people were afraid to ride on trains in the early days because ___________________.
2. Railroad-building was easier in the interior of our country than in the East or the West because ___________________________________.
3. There are many more miles of railroads east of the Mississippi than west of that river because _________________________________.
4. The United States has more miles of railroads than any other country because ________ ______________________________________.
5. Our railroad mileage is not likely to increase much in the future because ___________ ______________________________________.

A graph to make. Make a graph showing how the railroad mileage in our country has increased from 1830 to the present time. Use the figures given in Table 30 on page 517.

Some things to explain. 1. Explain how the railroads of our country serve (1) the farmers; (2) the ranchmen; (3) the lumbermen; (4) the miners; (5) the manufacturers.

2. Explain how the railroads helped in the settlement of the western part of our country.

3. Explain why passenger travel on our railroads has decreased in the last few years.

Map studies. The map on pages 484–485 shows the principal railroads of our country. Use that map to work out the following map studies:

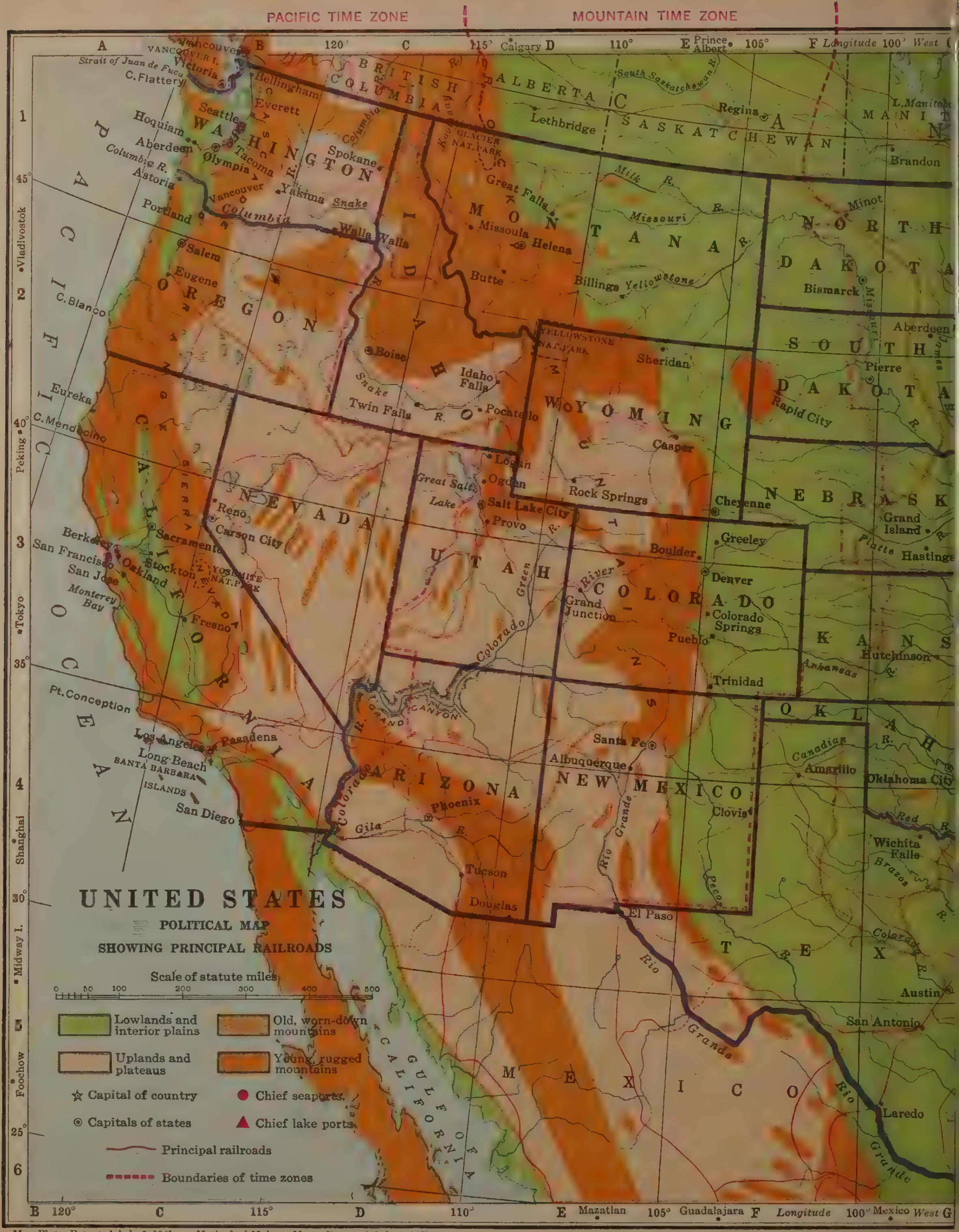
1. What seaports on the Atlantic coast appear to be important railroad centers? on the Gulf coast? on the Pacific coast? Why do so many railroads run to the seaports?

2. What large city is the chief railroad center of the Central Plains? How do you explain the fact that this city has so many railroad lines?

3. Find three important railroad centers on the Mississippi River. Which one is a great flour-milling city? Which one was the starting point for trails to the West in the early days? Which one is a great cotton market?

4. What cities on the Missouri River are railroad centers? At which one was the building of the first transcontinental railroad begun?

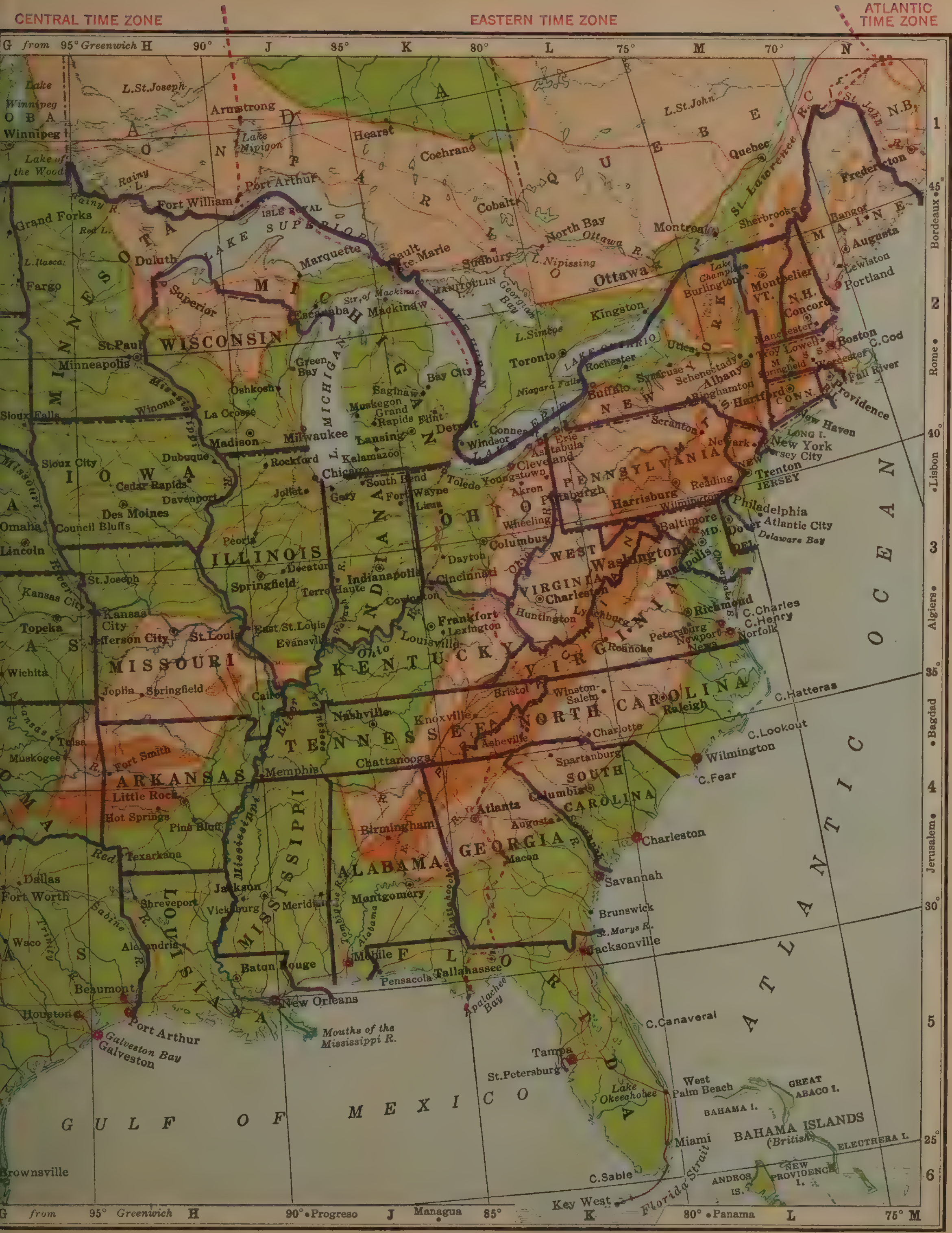
5. Prove by the map that many of our railroads follow river valleys. What reasons can you give for this?



UNITED STATES

POLITICAL MAP SHOWING PRINCIPAL RAILROADS

PACIFIC TIME ZONE
MOUNTAIN TIME ZONE
Scale of statute miles
0 50 100 200 300 400 500
Lowlands and interior plains
Old, worn-down mountains
Uplands and plateaus
Young, rugged mountains
☆ Capital of country
● Chief seaports
◎ Capitals of states
▲ Chief lake ports
Principal railroads
Boundaries of time zones
A B C D E F
120° 115° 110° 105° Longitude 100° West
45° 40° 35° 30° 25°
1 2 3 4 5 6
Vladivostok
Peking
Tokyo
Shanghai
Midway I.
Foochow
PACIFIC OCEAN
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
CANADA
Vancouver
Vancouver I.
Victoria
Strait of Juan de Fuca
C. Flattery
Calgary
Prince Albert
Lethbridge
Regina
L. Manitoba
Brandon
South Saskatchewan R.
Columbia R.
Kootenai R.
GLACIER NAT. PARK
WASHINGTON
Bellingham
Everett
Seattle
Hoquiam
Aberdeen
Olympia
Tacoma
Spokane
Yakima
Vancouver
Walla Walla
Snake
Columbia R.
CASCADE
Astoria
Portland
OREGON
Salem
Eugene
C. Blanco
IDAHO
Boise
Idaho Falls
Pocatello
Twin Falls
Snake R.
MONTANA
Great Falls
Missoula
Helena
Butte
Billings
Missouri R.
Milk R.
Yellowstone R.
NORTH DAKOTA
Minot
Bismarck
SOUTH DAKOTA
Aberdeen
Pierre
Rapid City
James R.
Missouri R.
YELLOWSTONE NAT. PARK
WYOMING
Sheridan
Casper
Rock Springs
Cheyenne
ROCKY MTS.
NEBRASKA
Grand Island
Hastings
Platte R.
CALIFORNIA
Eureka
C. Mendocino
SIERRA NEVADA
COAST RANGES
Sacramento
Berkeley
Oakland
San Francisco
Stockton
San Jose
YOSEMITE NAT. PARK
Monterey Bay
Fresno
Pt. Conception
Los Angeles
Pasadena
Long Beach
SANTA BARBARA ISLANDS
San Diego
NEVADA
Reno
Carson City
UTAH
Logan
Ogden
Great Salt Lake
Salt Lake City
Provo
Green R.
COLORADO
Grand Junction
Boulder
Greeley
Denver
Colorado Springs
Pueblo
Trinidad
Colorado R.
KANSAS
Hutchinson
Arkansas R.
GRAND CANYON
ARIZONA
Phoenix
Gila R.
Tucson
Douglas
Colorado R.
NEW MEXICO
Santa Fe
Albuquerque
Clovis
Rio Grande
Pecos R.
OKLAHOMA
Oklahoma City
Canadian R.
Red R.
TEXAS
Amarillo
Wichita Falls
Brazos R.
Colorado R.
El Paso
Austin
San Antonio
Laredo
Rio Grande
MEXICO
GULF OF CALIFORNIA
Mazatlan
Guadalajara
Mexico


CENTRAL TIME ZONE
EASTERN TIME ZONE
ATLANTIC TIME ZONE
G from 95° Greenwich H 90° J 85° K 80° L 75° M 70° N
1
2
3
4
5
6
45°
40°
35°
30°
25°
Bordeaux
Rome
Lisbon
Algiers
Bagdad
Jerusalem
Lake Winnipeg
Winnipeg
L.St.Joseph
Armstrong
Lake Nipigon
Lake of the Woods
Rainy L.
Rainy R.
Port Arthur
Fort William
Isle Royal
Lake Superior
Hearst
Cochrane
Cobalt
North Bay
Ottawa R.
L.Nipissing
Sudbury
Ottawa
Quebec
L.St.John
St. Lawrence R.
Montreal
Sherbrooke
St. John R.
N.B.
Fredericton
Bangor
Augusta
Maine
Lewiston
Portland
Q U E B E C
O N T A R I O
M A N I T O B A
Grand Forks
Red L.
L.Itasca
Duluth
Fargo
Superior
Marquette
Sault Ste.Marie
Str. of Mackinac
Mackinaw
Manitoulin
Georgian Bay
Escanaba
L.Simcoe
Kingston
Lake Champlain
Burlington
Montpelier
VT.
N.H.
Concord
Manchester
Lowell
Boston
C.Cod
Troy
Worcester
Springfield
Fall River
Providence
MASS.
CONN.
Hartford
New Haven
Long I.
New York
Jersey City
Newark
Trenton
NEW JERSEY
Philadelphia
Atlantic City
Delaware Bay
Dover
DEL.
MD.
Toronto
Lake Ontario
Rochester
Utica
Syracuse
Schenectady
Albany
Binghamton
Buffalo
Niagara Falls
NEW YORK
Scranton
Reading
Harrisburg
Wilmington
Baltimore
Washington
Annapolis
PENNSYLVANIA
Lake Erie
Erie
Ashtabula
Cleveland
Youngstown
Akron
Pittsburgh
Wheeling
Columbus
Dayton
Cincinnati
OHIO
Toledo
Conneaut
Windsor
Detroit
Lake Huron
Bay City
Saginaw
Flint
Muskegon
Grand Rapids
Lansing
Kalamazoo
MICHIGAN
L. Michigan
Green Bay
Oshkosh
Milwaukee
Madison
La Crosse
Winona
WISCONSIN
St.Paul
Minneapolis
MINNESOTA
Sioux Falls
Sioux City
Dubuque
IOWA
Cedar Rapids
Davenport
Des Moines
Omaha
Council Bluffs
Lincoln
Missouri River
Mississippi R.
Rockford
Chicago
South Bend
Gary
Fort Wayne
Lima
Joliet
Peoria
ILLINOIS
Decatur
Springfield
Indianapolis
Terre Haute
INDIANA
Wabash R.
St.Joseph
Kansas City
Topeka
Jefferson City
St.Louis
East St.Louis
Evansville
MISSOURI
Wichita
Joplin
Springfield
Cairo
Ohio R.
Covington
Frankfort
Lexington
Louisville
KENTUCKY
WEST VIRGINIA
Charleston
Huntington
Lynchburg
Richmond
Petersburg
Newport News
Norfolk
C.Charles
C.Henry
Chesapeake B.
Roanoke
VIRGINIA
Bristol
Winston-Salem
Raleigh
NORTH CAROLINA
C.Hatteras
C.Lookout
Wilmington
C.Fear
Charlotte
Asheville
Knoxville
Nashville
TENNESSEE
Tennessee R.
Chattanooga
Memphis
Tulsa
Muskogee
Fort Smith
Arkansas R.
ARKANSAS
Little Rock
Hot Springs
Pine Bluff
Red R.
Texarkana
Dallas
Fort Worth
Waco
Trinity R.
Sabine R.
Shreveport
Alexandria
LOUISIANA
Beaumont
Houston
Port Arthur
Galveston Bay
Galveston
Brownsville
Jackson
Vicksburg
Meridian
MISSISSIPPI
Mississippi R.
Baton Rouge
New Orleans
Mouths of the Mississippi R.
Birmingham
Montgomery
ALABAMA
Tombigbee R.
Alabama R.
Mobile
Pensacola
Tallahassee
Apalachee Bay
Chattahoochee R.
Atlanta
Augusta
Macon
GEORGIA
Savannah R.
Savannah
Brunswick
St.Marys R.
Jacksonville
Spartanburg
Columbia
SOUTH CAROLINA
Charleston
FLORIDA
C.Canaveral
Tampa
St.Petersburg
Lake Okeechobee
West Palm Beach
Miami
C.Sable
Key West
Florida Strait
GREAT ABACO I.
BAHAMA I.
BAHAMA ISLANDS (British)
ELEUTHERA I.
NEW PROVIDENCE I.
ANDROS IS.
GULF OF MEXICO
ATLANTIC OCEAN
G from 95° Greenwich H 90° • Progreso J Managua 85° K 80° • Panama L 75° M

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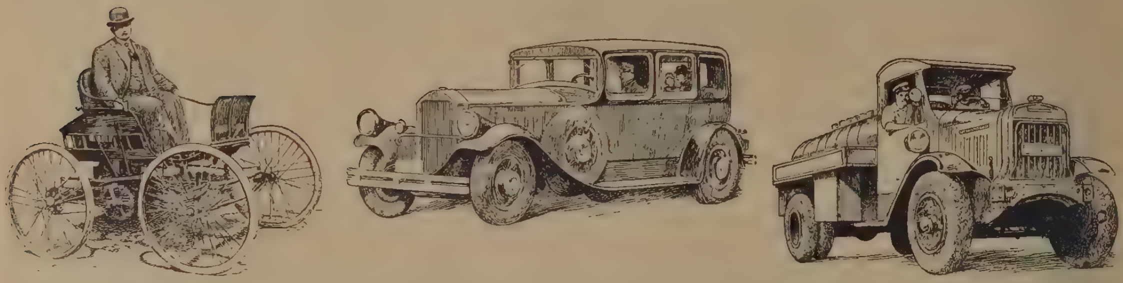


Figure 469. From the "horseless carriage" to the modern motor car. At the left is Mr. Elwood Haynes in his first automobile, which was built on the lines of the horse-drawn carriages of his day. Contrast this simple open car with its modern descendants — the closed passenger car and the motor truck of today.

3. THE NEW AGE OF AUTOMOBILES AND AIRPLANES

It was not until after railroad-building had reached its height that automobiles were invented. Still more recently the airplane has been invented and perfected for passenger and mail service. These two modern inventions have made such great changes in transportation that we now live in what is often called the "motor age." Since automobiles and airplanes are driven by power from gasoline engines, our motor age depends on our resources of petroleum.

Early automobiles. The first gasoline automobile in the United States was driven by its inventor, C. E. Duryea, in 1891. That car did not satisfy him. He improved his plan, and with his brother's help built five gasoline motor cars in the next three years. In 1894 the first American automobile road race took place between Chicago and Waukegan, a distance of about fifty miles. Most of the cars failed to finish. Mr. Duryea's car, keeping up a speed of ten miles an hour, won the race.

On July 4, 1894, Elwood Haynes drove a gasoline automobile of his own invention at Kokomo, Indiana. In the same year Henry Ford produced his first automobile. Since then the Ford factories have put more motor cars on the roads of the world than any other company.

All the early automobiles are curiosities today. They had carriage bodies, and for some time were called "horseless carriages." Mr. Haynes and Mr. Ford used wheels like those which were being made for bicycles, but some of the first automobiles had carriage wheels. *See Figure 469.*

The rapid increase of automobiles. In the year 1900, 4192 automobiles were built in the United States; in 1928 the number built was over 4,600,000. There are now about 25,000,000 cars registered in the United States — far more than are in use in any other country in the world. In other words, we have one automobile for every 5 persons. Great Britain has one for every 43 persons, France one for every 44, and Germany one for every 196 persons.

Automobiles for work and play. At first automobiles were used almost wholly for pleasure, but they soon came to be used for business purposes. Large numbers of people now go to and from their work in automobiles, and nearly all large factories have parking spaces for the cars belonging to their employees. Wherever a large building is being put up, one is sure to see many automobiles belonging to the workmen.

During the summer season cars bearing the license plates of every state pass through the cities and along the highways in the North. The same is true in the winter in the South. Every week-end and every holiday there are actually millions of cars on our roads. As a people we have the "touring habit," and we think nothing of covering from one to two hundred miles a day, or even more, in our automobiles.

In the summer thousands of small groups of people go off on long motor tours, often from coast to coast. The national parks and some of the national forests have camps which these "modern nomads" can use free of charge, and many private persons run overnight camps for motorists. The automobile has done more to encourage people to get out of the cities and enjoy the beauties of the country than any other invention.

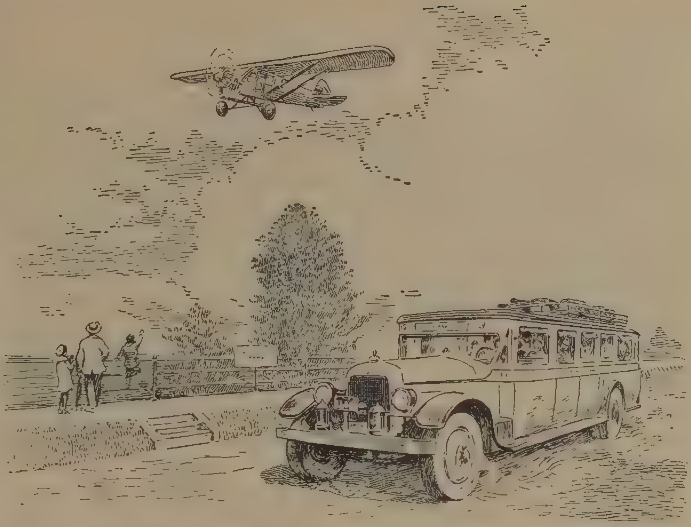


Figure 470. Two modern means of passenger transportation — the airplane and the motor bus. When you ride in a motor bus, remember that a hundred years ago most people believed that the stagecoach would always be the best means of travel on the land.

Motor trucking. The stores in our cities now use motor trucks for delivering packages to the homes of their customers, and business firms and express companies use trucks in transferring freight to and from the railroads. Market gardeners deliver fresh vegetables to the cities by motor truck, and many of our manufacturers use trucks for shipping goods for considerable distances over the highways. Can you think of other purposes for which motor trucks are used?

The use of motor busses. Motor busses are replacing trolley cars in many of our small towns and along many of the interurban routes between our cities. In the larger cities they are used in addition to other means of transportation for passengers. In the country districts children are carried to and from school by motor bus.

Between all the larger cities of our country there is regular motor-bus service for passengers just as in earlier days there was stagecoach service. It is even possible to travel all the way across the continent by motor bus. *See Figure 470.*

The demand for good roads. As soon as automobiles began to come into general use and to run at greater and greater speed, people began to demand better roads. Old roads were improved and new highways were built. Today nearly all our cities are approached by broad, smooth highways on many of which four or more automobiles can run abreast. Where in earlier days a gayly colored stagecoach drawn by four or perhaps six horses rolled by once in every few days, we now see a constant stream of comfortable automobiles driven by engines which have the power of thirty, forty, sixty, or even eighty horses. Thousands of automobiles now pass in a day where but a hundred years ago one or two stagecoaches passed in a week.

Road improvements. At first the old roads were made smoother without much widening. Then, as more and more automobiles came into use, old roads were torn up and broader paved highways took their place. Sharp curves in the old carriage roads have been cut out and the roads straightened to make them safer for motor cars. New and wider bridges have been built; and where the land drops off steeply from the highways, stone walls or fences of steel wire have been put up. The increased use of automobiles and the building of good roads have gone hand in hand, and today highways are being improved faster than railroads were once built.

State and national highways. Today every state in the Union appropriates money and taxes gasoline for the purpose of building and improving roads. The national government also assists in the construction of motor highways, and with its help motor roads are being built from north to south across our country, and from the Atlantic coast to the Pacific. Does any one of the national highways pass through the county where you live?

Our network of highways. Our country is already covered with a network of highways which surpass the roads of any other country. Of all the miles of ordinary dirt and gravel roads in the world, over 50 per cent are in the United States; and of all the roads with concrete or high-grade macadam surfaces, about 90 per cent are in the United States. In Table 31 on page 517 you will find other interesting figures regarding roads.

All the more densely populated parts of our country are well supplied with good roads, and every year more highways are being built in the mountainous parts of the East and the West. Thus many of the beauty spots of the country which were formerly difficult to reach can now be visited easily by automobile. We are in the midst of a great period of road-building which is opening up parts of the country which were never reached by the railroads.

Airplanes and dirigibles. For centuries there have been men who wanted to learn how to fly like birds from one place to another over the land and over the sea. From time to time men tried to build "flying machines," but without success. At last, in 1903, the first successful flight in a machine heavier than air was made by Orville Wright. The machine had been built by the Wright brothers, Orville and Wilbur, who had been bicycle dealers in Dayton, Ohio. The flight was very short, but it opened the way for the newest and most modern of all our means of transportation.

Today airplanes are so common that they are no longer curiosities, and each year they are being used more and more for passenger travel and for carrying mail and small freight. Larger and larger planes are being built so that more passengers can be carried. Pilots are being trained more and more carefully, and engines are being improved so fast that travel by air is becoming safer all the time.

Together with the development of the airplane, which is heavier than air, has come the development of the dirigible, which is lighter than air. It is supported by a huge sausage-shaped balloon filled with gas. As yet dirigibles are not able to fly so fast as airplanes, but they have the advantage of being able to stay in the air if the engines stop running.

Already a dirigible known as the *Graf Zeppelin* has flown around the world carrying passengers, and plans are well worked out for regular passenger service by dirigible across the Atlantic Ocean between Europe and both the Americas. Many people think that the dirigible, rather than the airplane, will be the "ship of the air" for transoceanic passenger service in the future. Others believe that the time will come when the airplane will provide regular passenger service over the oceans as well as over the lands.

Airways and airports. An airway is a regular route over which a pilot guides his plane. Along such a route there are beacon lights to guide the pilot at night, and emergency landing fields where he can land in case of dangerous storms or engine trouble.

Along the first-class airways there are regular stopping places for planes which are known as airports. They have large landing fields, repair shops, and hangars to shelter the planes. At many of the airports there are waiting rooms for passengers, ticket offices, baggage rooms, and telegraph, telephone, and wireless stations. In other words, a modern airport is in many ways like a railroad terminus. *See Figure 471.*

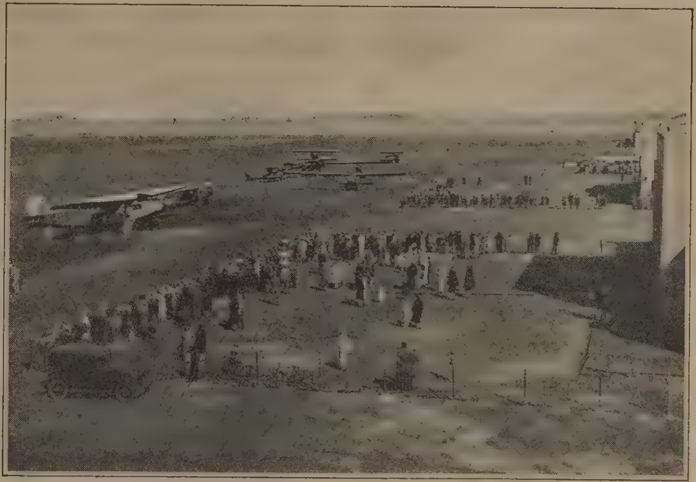

Photograph by Ewing Galloway, N.Y.

Figure 471. The airport at Boston, Massachusetts. The large passenger plane at the left makes daily trips between Boston and New York. Why must airports be located where the ground is level?

Progress in aviation. In the eleven years which passed between Orville Wright's first successful flight in 1903 and the beginning of the World War in 1914, many improvements were made in airplanes. The war itself brought about a swift growth in aviation, for airplanes were used by the armies and navies of the countries that were fighting, and each country was driven by necessity to improve its aircraft as fast as possible.

When the war was over, men turned their attention to the peace-time use of airplanes. As a result, Europe and the United States are now crisscrossed by networks of airways, which are expanding every year. Over these airways planes carrying mail, passengers, and small freight now fly with remarkable regularity and safety.

Many uses for airplanes. When we speak of "commercial flying," we refer to the use of airplanes for mail, passenger, and express service. The planes, however, serve many other useful purposes. They are now being used for exploration in the little-known parts of the world, and for mapping and photography in many different places. Airplane photographs, which were unknown but a few years ago, appear in all our newspapers and magazines now, giving us a much better idea of "the lay of the land" than we can possibly get from photographs taken from the ground.

In our national forests airplanes are used for patrolling the forests and watching for fires. This work is of great value, for fires can often be detected more quickly from the air than from the lookout stations on the hilltops and mountains.

Overcoming the dangers of flying. The two greatest dangers in flying are the possibility of engine trouble and bad weather conditions. The first danger, so far as commercial flying is concerned, has been largely overcome by improvements in engines and their thorough inspection before every flight.

To guard against dangers from weather conditions, our United States Weather Bureau sends out regular reports for the use of air pilots just as it does for the use of captains of ships. These reports give warnings of approaching storms so that pilots are able to tell when it is unsafe for them to take off on their regular flights. While flying, commercial pilots receive weather reports by radio, making it possible for them to change their courses to avoid storms.

Our commercial airways. Figure 472 shows the routes over which commercial airplanes operate regularly in our country today. Study the map carefully, noting the uses that are made of the various airways.

The first air-mail route in the United States was established between New York City and Washington, D.C., in 1918. Since then the air-mail routes have been extended so rapidly that it is now possible to send letters and packages by airplane between many of the larger cities of our country. Study Figure 472 again and see what city nearest your home has direct air-mail service.

Some of the planes that fly regularly over the airways carry passengers or express freight, or both, in addition to mail. Others which do not carry mail are operated for passengers and express freight, or for passengers alone. Two of our great railroad companies have joined with an air-transportation company to provide passenger service by rail and air between the Atlantic coast and the Pacific. By flying during the day and traveling by train during the night, passengers make the trip over this route between New York City and Los Angeles or San Francisco in about forty-eight hours. Very likely we shall see a great increase in the combination of travel by rail and air in the near future.

Some things to explain. 1. Why the present period of our history is often called the "motor age."

2. How motor cars have (1) helped business; (2) affected the railroads; (3) affected road-building.

3. Why gasoline is taxed by the states.

4. How tractors have helped the farmers.

5. Why all our larger cities have airports.

6. How airplanes are changing our transportation problems.

Topics for committee reports. 1. Colonel Lindbergh's famous flights. 2. The cruises of the *Graf Zeppelin.* 3. Our nearest airport.

Automobile problems. 1. From the latest number of the World Almanac find out how many motor cars are registered in your state. Divide the population of your state by the number of motor cars, and give the correct figure to complete the following statement: We have in our state one motor car for every ____ persons.

2. It is estimated that as a nation we spend $14,000,000,000 a year on the purchase and maintenance of automobiles. What does that expenditure amount to per person?

4. Means of Communication

We have seen how one invention after another has resulted in improved means of transportation. Means of communication also have been improved, and messages can now be sent with such speed that news travels around the world in a few hours' time. How many different means of sending messages can you name?

Mail service. During colonial days in this country some of the mail was carried from settlement to settlement along the coast in sailing vessels. Letters that went inland were first carried in the saddlebags of horseback riders and later in "post bags" by the stagecoaches. The inns located along the early highways were the first headquarters where mail was distributed, and the arrival of the weekly "post" was an event for which people waited eagerly. Mail traveled slowly in those days, and people wrote very few letters compared with the numbers written today.

In 1790 there were about twenty-four post offices in this country. Today there are about 50,000. Mail now travels in special cars on fast trains or flies through the air in airplanes, and in all the cities and larger towns it is delivered promptly at houses and business offices by postmen. In many of the country districts where people used to have to go long distances to the post offices, rural free delivery of mail is now provided.

All the countries of the world coöperate in an international postal service which makes

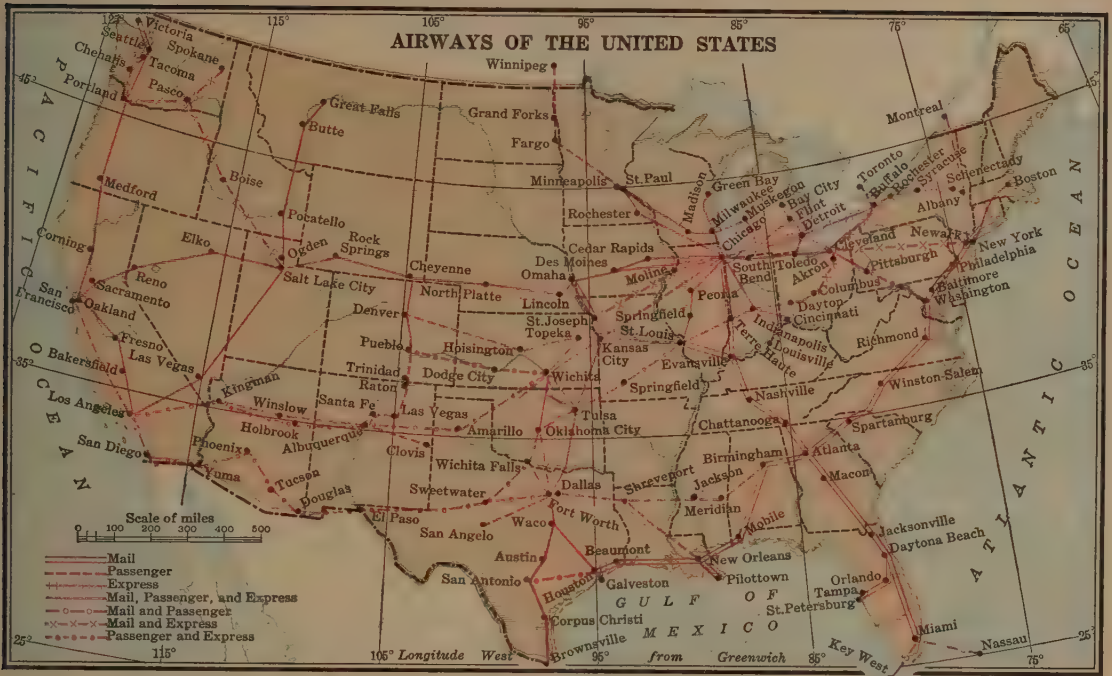

AIRWAYS OF THE UNITED STATES
Winnipeg
Victoria
Seattle
Spokane
Chehalis
Tacoma
Portland
Pasco
Great Falls
Butte
Grand Forks
Fargo
Montreal
Boise
Medford
Minneapolis
St.Paul
Madison
Green Bay
Milwaukee
Muskegon
Bay City
Flint
Detroit
Toronto
Buffalo
Rochester
Syracuse
Schenectady
Boston
Albany
Pocatello
Rochester
Elko
Rock Springs
Ogden
Corning
Chicago
Cleveland
Newark
New York
Philadelphia
Reno
Salt Lake City
Cheyenne
Cedar Rapids
Des Moines
Omaha
Moline
South Bend
Toledo
Akron
Pittsburgh
San Francisco
Sacramento
Oakland
North Platte
Denver
Lincoln
St.Joseph
Topeka
Peoria
Springfield
St.Louis
Columbus
Dayton
Cincinnati
Baltimore
Washington
Fresno
Las Vegas
Bakersfield
Pueblo
Hoisington
Kansas City
Indianapolis
Terre Haute
Louisville
Evansville
Richmond
Trinidad
Raton
Dodge City
Wichita
Springfield
Nashville
Winston-Salem
Kingman
Winslow
Los Angeles
Santa Fe
Las Vegas
Tulsa
Holbrook
Albuquerque
Amarillo
Oklahoma City
Chattanooga
Spartanburg
San Diego
Phoenix
Clovis
Wichita Falls
Birmingham
Atlanta
Yuma
Tucson
Douglas
Sweetwater
Dallas
Shreveport
Jackson
Macon
El Paso
Fort Worth
Meridian
Mobile
Waco
San Angelo
Jacksonville
Daytona Beach
Austin
Beaumont
New Orleans
San Antonio
Houston
Galveston
Pilottown
Orlando
Tampa
St.Petersburg
Corpus Christi
Brownsville
Miami
Key West
Nassau
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
Scale of miles
0 100 200 300 400 500
Mail
Passenger
Express
Mail, Passenger, and Express
Mail and Passenger
Mail and Express
Passenger and Express
125° 115° 105° 95° 85° 75° 65°
45° 35° 25°
105° Longitude West from Greenwich

Figure 472. The airways over which airplanes are operated regularly in the United States.

it possible to send letters and packages from one country to another. Today it takes no longer to send a letter from New York to London than it once took to send a letter from New York to Boston.

The telegraph. While great improvements were being made in steam engines and locomotives, but before anyone had thought of gasoline engines and automobiles, there were men at work studying electricity. They were trying to find out what electricity was and whether it could be made useful.

Before 1840 Samuel F. B. Morse, an American inventor, made two instruments which, when connected by an electric wire, could be used in sending dot-and-dash signals from one end of the wire to the other. That was the first telegraph outfit. Mr. Morse succeeded in convincing people of the usefulness of his invention, and in 1844 the first telegraph line was established, between Washington and Baltimore.

The first telegraph line was soon followed by others, for people were quick to make use of this new and rapid means of communication. Railroad companies soon strung wires on poles along their tracks so that messages could be sent quickly from station to station. This made railroad travel much safer than it had been before. Can you explain why?

When the people of Europe and other parts of the world learned of this new American invention, they too wanted to use it, and today all the more progressive countries have fully developed telegraph systems.

Submarine cables. In 1866 the first telegraph message was sent from this country to Europe by means of a submarine cable laid on the floor of the ocean. A cable is simply a bundle of small wires carefully covered for protection. The electrical current which passes through the wires carries the dot-and-dash sounds from one end of the cable to the other, just as telegraph wires do on the land.

This extension of the telegraph by means of submarine cables was a great step forward in binding the nations of the world together. Instead of waiting weeks for the transfer of letters, messages could be sent back and forth across the oceans in a few minutes' time. Today all the continents are linked together by cable lines. *See Figure 342 on page 343.*

The telephone. In 1876 Alexander Graham Bell, another American inventor, succeeded in talking with a friend over a wire which he put up between Boston and Cambridge. This was the first successful telephone. It was a crude instrument, but it was soon improved. Little by little business firms began to use telephones, and then people began to put them into their houses. Today telephones are so common that it is hard to understand how people managed to get along without them.

We now have over 19,000,000 telephones in this country, or more than half of all the telephones in the world. They are a great convenience in our homes, but they are of much greater importance in carrying on business. Can you think of ways in which methods of carrying on business must have changed when telephones came into common use?

The wireless telegraph. The time came when many people believed that telegraph messages could be sent through the air without wires. Many men were at work on this problem, but the first to succeed was an Italian, Guglielmo Marconi. In 1901 he succeeded in sending wireless signals across the Atlantic Ocean, and in 1903 he sent a complete message. Many other scientists and inventors helped to perfect "wireless," and it is now available for public use just as the telegraph and the cable are.

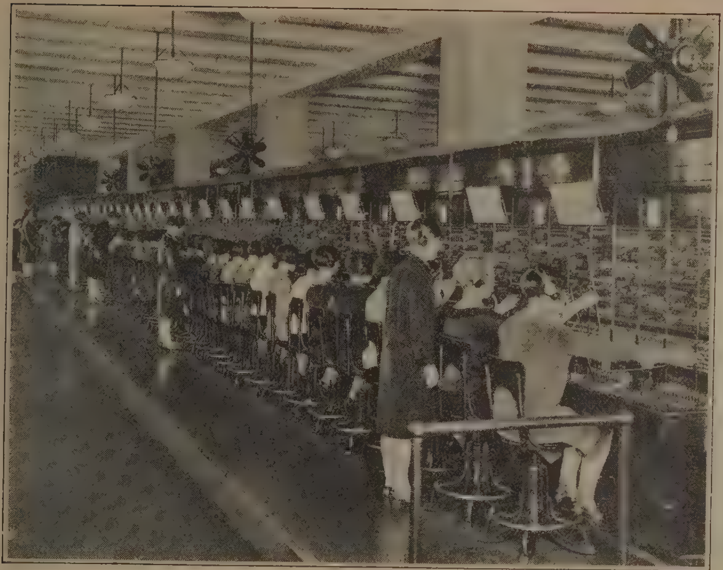
All ships carrying passengers are now equipped with wireless instruments, and the days of "silence at sea" have passed. Ships now communicate with one another and with wireless stations on land, and passengers on all the larger ocean liners receive the day's news by this means of communication. In case of shipwreck or other accident, ships send out the S O S call for help, which brings other ships to the rescue. Many lives have been saved in this way since wireless has been perfected.

Radiotelephony. More wonderful even than the wireless telegraph is the development of radiotelephony, which we call radio. The entire growth of this means of communication has come since 1911, and the use of radio as we know it today has come since 1920.

There is hardly a person in the United States who is not now familiar with radio. By means of receiving instruments in our homes we hear addresses, sermons, musical programs, and entertainments broadcast from stations near and far. Business firms make use of the radio for advertising their products and service, and broadcasting stations announce the more important items of the world's news at regular intervals each day. No invention has done so much to provide people with up-to-the-minute information on all subjects as has the radio.

As you probably know, the carrying of the human voice and other sounds by radio is made possible through the use of invisible electric waves in the air. The radio, then, is an invention which harnesses those waves for our use.

What modern communication means to the world. Through the use of modern means of communication the nations of the world are coming to know one another much better, and to understand one another's problems more clearly. Thus intelligent sympathy between nations is gradually replacing the lack of knowledge and the suspicion which in the past have often made them enemies. It is not too much to hope that the time will come when the nations of the world will understand one another so well that all difficulties will be settled without wars.



From Ewing Galloway, N.Y.

Figure 473. Telephone operators in a central telephone exchange in New York City. The girls are working at the switchboard where the telephone connections are made. Behind them are the supervisors.

From Ewing Galloway, N.Y.

Figure 474. The explorer, Sir Hubert Wilkins, giving a talk over the radio. He is speaking into the microphone.

Matching inventors and inventions. Each man named in the first column below is famous for one of the inventions in the second column. Match the inventors and inventions correctly.

Alexander Graham Bell	airplane
Robert Fulton	steamboat
Guglielmo Marconi	telegraph
Samuel F. B. Morse	telephone
Orville and Wilbur Wright	wireless

Summing up transportation benefits. 1. Give reasons to prove that steady improvement in means of transportation has played a large part in development and prosperity of our country. In making this summary, explain how modern means of transportation benefit the people engaged in each of the following kinds of work:

farming
lumbering
mining
commercial fishing
manufacturing
merchandizing (the buying and selling of goods)

2. Make a summary of the ways in which your own community — village, town, or city — benefits by the means of transportation which connect it with other parts of the country.

The story of transportation. Use the following topics for an oral or written composition telling the story of the development of transportation in our country.

1. How the early settlers along our Atlantic coast traveled and transported goods.

2. When and why the trails were widened into roads, and how the early roads were used.

3. The part played by the rivers in travel and transportation from the early days of settlement to the present time.

4. When and why canals were built; how they were used; and why they were finally abandoned.

5. How the Great Lakes helped in the settlement of the upper Mississippi Valley, and how they are used today.

6. When and where railroad-building began in our country; and why our country is covered with a network of railroad lines today.

7. When and how automobiles came into use, and what changes they made in transportation and travel.

8. How we are now developing means of travel and transportation by air.

XI. THE DEVELOPMENT OF COMMERCE

Foreword. The term "commerce" means an exchange of products, and it includes all the trading which various groups of people carry on with one another. Trade between the people of the same country is called *domestic commerce,* while trade between the people of one country and those of another is called *foreign commerce.*

In this chapter we shall first consider our domestic commerce, and then our commerce with the people of other countries. As we do so, keep the following questions in mind:

1. Why have the people of the United States developed a very large domestic trade?
2. Why has the foreign commerce of the United States become very important?
3. What are our chief exports, and why?
4. What products do we need most to import, and why?
5. What rank does our country hold in the foreign trade of the world?

1. Domestic Commerce

Our domestic commerce has grown from the simplest beginnings in colonial days to an exchange of products between various parts of the country which now amounts to hundreds of millions of dollars a year. What reasons can you suggest for the fact that the occupations and industries in various sections of the country differ sufficiently to bring about this widespread exchange of products?

Early trade with the Indians. Domestic trade in this country began with the exchange of goods between the settlers and the Indians. The Indian products which the settlers wanted most were furs, and in exchange for them they gave knives, small tools, beads, and trinkets which had come from Europe. As soon as the settlers discovered that they could obtain a wealth of furs from the Indians, they established trading stations at various places on the rivers and visited them at regular intervals to collect all the skins that had been brought in.

The reason the settlers wanted to obtain as many furs as possible was that furs found a ready market in northwestern Europe. The settlers needed many different things from their home countries in the Old World, and in order to get them it was necessary to send products from America for exchange. Thus domestic trade with the Indians helped the settlers in the American colonies to carry on foreign trade with Europe.

Trade among the colonies. Since the American colonies stretched north and south for hundreds of miles along the Atlantic coast, trade among them was carried on in the early days chiefly by sailing vessels which went from port to port. Inland trading was difficult and, except for the fur trade, did not amount to much until roads were built. Even then, much trade continued to be carried on by boat.

This colonial coasting trade consisted largely of an exchange of Southern raw materials for Northern manufactured goods. To the colonies in the North the people of the South sent tobacco, rice, cotton, and naval stores, taking in exchange a great variety of manufactured products such as tools, household wares, and cloth.

Yankee peddlers. In the days when roads were few and poor, housewives in the country districts of the Northern colonies depended on the visits of New England peddlers for many of the household wares which they needed. These men were called Yankee peddlers because "Yankee" was the nickname by which all New Englanders were known. The peddlers came chiefly from Connecticut, and their business began in an interesting way.

In 1740 two brothers by the name of Patterson came from Ireland and settled in Connecticut. They were tinsmiths by trade, and they continued their work of making tinware in this country. When they had a stock of dishes and other articles of tin ready for sale, they peddled them from house to house. As their business increased they went farther into the country on horseback, and in time they engaged other men to ride about selling their wares.

From this start, Yankee peddlers became more and more numerous. As more and more roads were built they began to use wagons, and they went beyond the New England States into New York, Pennsylvania, and New Jersey. Connecticut, in the meantime, was becoming a center for the manufacture of many kinds of metal goods, and many of the peddlers added brass buttons, brass clocks, pins, needles, and other metal articles to their stock of tinware. They continued to do a brisk trade until the days when the shipment of goods by railroad put them out of business.

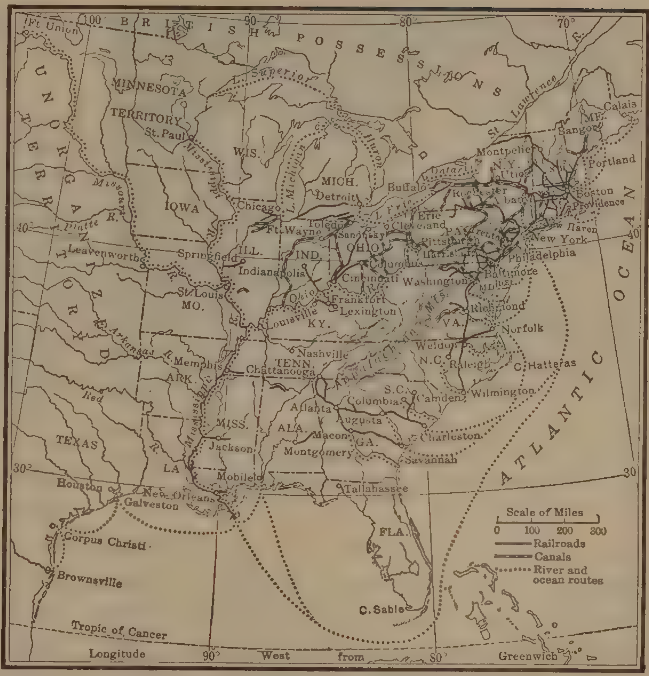
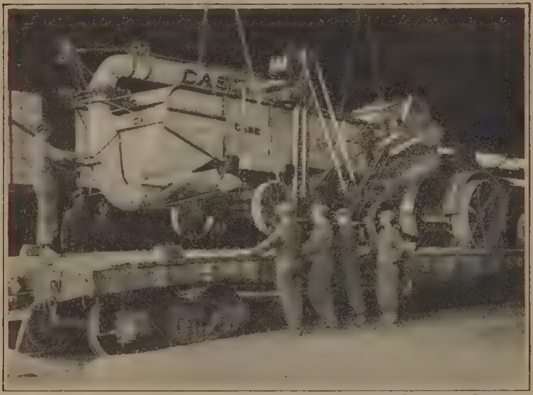

BRITISH POSSESSIONS
UNORGANIZED TERRITORY
MINNESOTA TERRITORY
St. Paul
WIS.
MICH.
IOWA
ILL.
IND.
OHIO
MO.
KY.
TENN.
ARK.
MISS.
ALA.
GA.
S.C.
N.C.
VA.
LA.
TEXAS
FLA.
N.Y.
ME.
Ft. Union
Superior
Detroit
Buffalo
Chicago
Toledo
Ft. Wayne
Sandusky
Cleveland
Erie
Pittsburgh
Harrisburg
Rochester
Albany
Utica
Montpelier
Bangor
Calais
Portland
Boston
Providence
New Haven
New York
Philadelphia
Baltimore
Washington
Richmond
Norfolk
Weldon
Raleigh
Wilmington
C. Hatteras
Camden
Columbia
Charleston
Savannah
Augusta
Macon
Atlanta
Montgomery
Tallahassee
Mobile
Jackson
New Orleans
Galveston
Houston
Corpus Christi
Brownsville
Memphis
Nashville
Chattanooga
Louisville
Frankfort
Lexington
Cincinnati
Columbus
Indianapolis
Springfield
St. Louis
Leavenworth
Platte R.
Missouri R.
Arkansas R.
Red R.
Mississippi R.
Ohio R.
L. Michigan
St. Lawrence
ATLANTIC OCEAN
C. Sable
Tropic of Cancer
Longitude 90° West from 80° Greenwich
100
90
80
70°
40
30
Scale of Miles
0 100 200 300
Railroads
Canals
River and ocean routes

Figure 475. A map showing the railroads, canals, and river and ocean routes in 1850. By what water routes could goods be sent from the Central Plains to the northeastern states?

Domestic trade by road, river, and canal. As people migrated westward across the Appalachian Mountains, trade sprang up between the East and the Mississippi Valley, which was then known as the "West." This trade was largely an exchange of foodstuffs from the "Western" farms for manufactures from Eastern workshops and factories. It was made possible by the Conestoga wagons which traveled slowly over the roads, by the steamboats which moved up and down the rivers, and by the canal boats.

The "flow" of domestic trade in 1850. By 1850 the "flow," or movement, of domestic trade in this country followed three main lines: (1) north and south along the Atlantic coast, (2) east and west between the upper Mississippi Valley and the Atlantic coast, and (3) north and south in the Mississippi Valley. Farm products from the Central Plains moved eastward on the canals, the rivers, and in places on the newly constructed railroads, or they moved southward down the Mississippi to New Orleans, where they were loaded on coasting vessels bound for ports of the northeastern states. Manufactured goods from the northeast reached the Central Plains by the same routes, moving in the opposite direction. *See Figure 475.*

At this time trade between the upper Mississippi Valley and the South was carried on almost wholly by steamboats on the Mississippi River, and as a result New Orleans had become an important seaport and St. Louis a busy river port. Along the Atlantic coast, trade between the North and the



Courtesy of J. I. Case Company

Figure 476. Loading a threshing machine on a railroad flat car. Why are the Central States the center for the manufacture of agricultural machinery?

South was still carried on largely by boat because as yet there was only one continuous north-south railroad in the East, and that ended at Wilmington, North Carolina. Sailing vessels handled much of the coastwise trade, but more and more steamboats were coming into use.

The effect of railroads on domestic trade. As more and more railroads were built, it became easier and easier to transport goods from one part of the country to another, and our domestic trade increased rapidly. Because of the speed with which the railroads could carry goods from place to place, they finally took away most of the business of the canal companies, and as years went on they became greater and greater competitors of the river boat companies and the coastwise shipping companies. This caused hardships for the companies so affected, but for the country as a whole the railroads brought greatly increased prosperity.

Trade between different sections of the country. As each new section of the country was settled, more and more trading was carried on. The farmers of the cotton belt and the Central Plains demanded manufactured products. They needed tools, clothing, and furniture and other household goods. They offered in trade the products of their farms, — the foodstuffs of the Central Plains and the cotton of the South.

Ranchmen in the Great Plains and in the grazing lands farther west shipped live stock eastward to market, taking in exchange food and manufactured goods. As mining developed in the West, the miners depended on the exchange of the raw materials which they produced for the food and manufactured goods which they needed.

These are but a few illustrations of the fact that trade within our country grew up because the various sections developed along different lines of production. It is because the people of the different sections have varied products to offer one another in trade, and because we have excellent means of transportation, that our domestic commerce has become so great.

The northeastern section. New England and the Middle Atlantic States form the northeastern manufacturing district of our country. About half of all the workers in these states are connected in one way or another with manufacturing industries. This part of the country, therefore, offers to the people of other sections a great variety of manufactures: clothing, shoes, iron and steel, machinery, tools, jewelry, and hundreds of other manufactured products.

In return for the vast quantities of manufactured goods which the people of the northeastern section sell in other parts of the country, they buy foodstuffs and raw materials from the interior, from the South, and from the West. They draw upon all parts of the country for food supplies, but especially on the Central States. They send to the South for cotton and lumber, and to the West for wool, lumber, and metals. In addition, they seek raw materials from many distant lands.

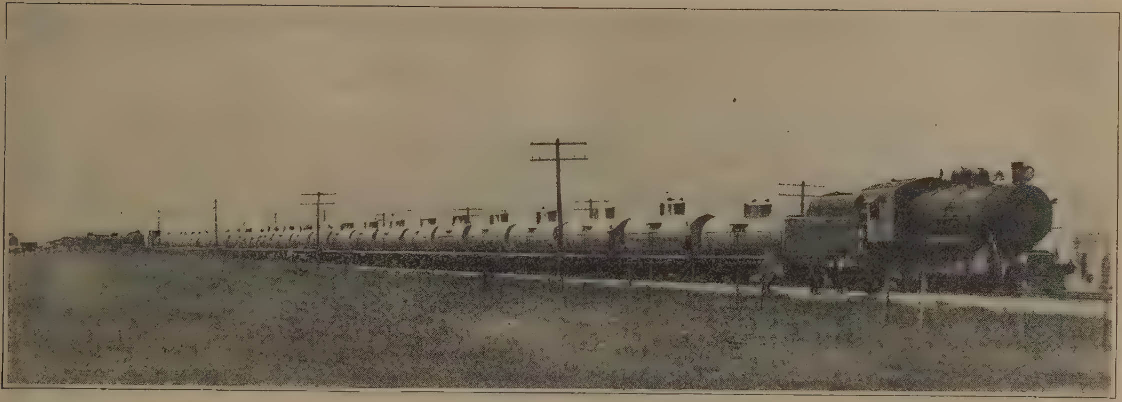


Figure 477. A long train of oil tank cars in Texas. Thousands of tank carloads of gasoline and other petroleum products are sent each year from the refineries of the South to the central and northeastern sections of the country. Why is the demand for various kinds of petroleum products so great in those sections?

The central section. The upper Mississippi Valley is our greatest farming region, and as you already know, it also carries on much manufacturing. The people of that section send large supplies of food to the East, and supplement their own manufactures with purchases of manufactured products from the northeastern industrial section. They ship some food and large quantities of manufactured goods to the Western States, taking in exchange the products of the forests and mines of the West and many kinds of fruit from the irrigated lands.

In certain lines of manufacturing the central section of the country takes the lead. There is no region in the world where so many farming machines and tools are made or so many automobiles built. These manufactured products of the Central States are distributed to all other sections of this country and to many distant parts of the world. *See Figure 476.*

The southern section. The Southern States of our country are famous the world over for the vast quantities of cotton which they produce. Raw cotton and cottonseed products are their greatest contribution not only to domestic trade but to our trade with foreign countries as well. As you know, large quantities of cotton are used in the Southern mills and large quantities are sent to mills in the northeastern industrial district. Southern cotton goes also to mills in the central part of the country and in the Far West.

Other products which the people of the South offer in trade are lumber and turpentine from the pine forests, and mineral products — chiefly oil, sulphur, bauxite, and phosphate. These products find their way, for the most part, to the states in the north-central and northeastern parts of the country. The northern sections look to the South for their supplies of fresh winter vegetables, and for part of their supplies of oranges and grapefruit. *See Figure 477.*

In exchange for these products of their farms, forests, and mines, the people of the South purchase from the north-central and northeastern sections large quantities of manufactured goods and certain foodstuffs, especially grain and meat.

The western section. The western section of our country supplies the other sections with large quantities of metals, for with the exception of the iron of the Superior and Birmingham districts and the lead and zinc

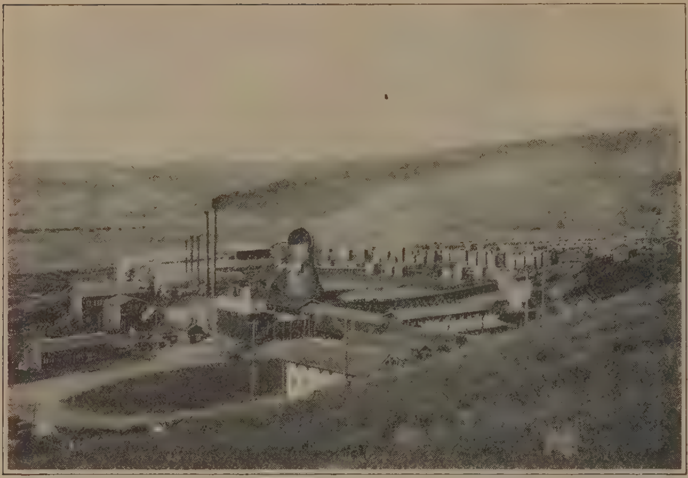


Figure 478. A lumber mill in Oregon. In the distance are large stacks of boards ready for shipment. Why do the central and northeastern sections of the country buy lumber from the Far West?

of the Mississippi Valley states, most of our metal ores are mined in the western mountains and plateaus.

In the Northwest are the best of our forest resources, and lumber from these forests is shipped eastward by rail to the Central States, and by water through the Panama Canal to our northeastern seaports. Western ranchmen supply the northeastern industrial district with much wool, and western fruit-growers supply all parts of the country with fruits of various kinds. *See Figure 478.*

For the people of the eastern and central parts of the country the West provides valuable markets for manufactured goods. The farms of the West require agricultural implements, the mines require mining machinery, and the manufacturing plants need industrial machinery. In addition, the people of the West buy large quantities of clothing, household goods, and other manufactured products from the sections farther east.

Reasons for the differences in the four economic sections of the country. Since our domestic trade is based on differences in products and needs in the four great economic sections of the country, it is worth while to sum up the reasons for those differences.

1. Agricultural products vary widely as a result of differences in climate. Give facts to prove the truth of this statement.

2. The central section produces a greater surplus of foodstuffs than any other section. What are the reasons for this?

3. The northeastern section provides the largest markets for the surplus foodstuffs of the central section. Why?

4. The South and the West produce the largest surplus of lumber. What are the reasons for this?

5. The central and northeastern sections make the largest demands for lumber. What reason can you give for this fact?

6. Except for iron ore and part of our supplies of lead and zinc, the West provides most of our metals. Why?

7. The central and northeastern sections make greater demands for metals than the South. Explain why.

8. Fuel resources are not evenly distributed throughout the country. What facts can you give to prove that this is true?

9. The greatest consumption of coal and petroleum is in the central and northeastern sections. Why?

10. The northeastern and central sections produce a far greater surplus of manufactured products than the South and the West. Give all the facts you can to explain why.

Committee work. Divide the class into four committees. Each committee should study one of the economic sections of the country and make a report to the rest of the class. The following questions should be answered in each report:

1. What products does this section contribute in largest quantities to the domestic commerce of our country, and why?

2. What products does it buy in large quantities from other sections, and why?

A production test. Write the names of the following products in a column on a sheet of paper. After each product write the section or sections of the country where it is produced in sufficient quantities to provide a surplus for shipment to other sections. Use letters to indicate the sections as follows:

N Northeastern
C Central
S Southern
W Western

cotton S
wool W
lumber S W
wheat C
paper N
coal N
meat N
iron ore W
copper W
clothing N
petroleum S
cane sugar S
automobiles C
rubber tires C
hides and skins
farm machinery
cotton goods
woolen goods
citrus fruits
iron and steel
boots and shoes

2. Foreign Commerce

Our foreign commerce, like our domestic commerce, has grown from very simple beginnings in colonial days. Our exports to other countries are now valued at more than five billion dollars a year, and our imports at more than four billion dollars. Do you know how our foreign trade began in colonial times, and why it has increased year by year?

Foreign trade in colonial days. The colonists who first settled along the Atlantic seaboard came with the definite idea of carrying on trade with their home countries. In the first few years of settlement ships from Europe brought supplies to the colonists and returned with cargoes of colonial products, chiefly furs from the northern colonies and tobacco from Virginia.

Soon, however, the New England colonists began to build ships, using the wood which the forests furnished in abundance. In time New England ships sailed by New England seamen came to be the chief means of carrying on trade between the colonies and distant lands. Trade with western Europe increased year by year, and before long the colonists entered into trade with the people of the West Indies. *See Figure 479.*

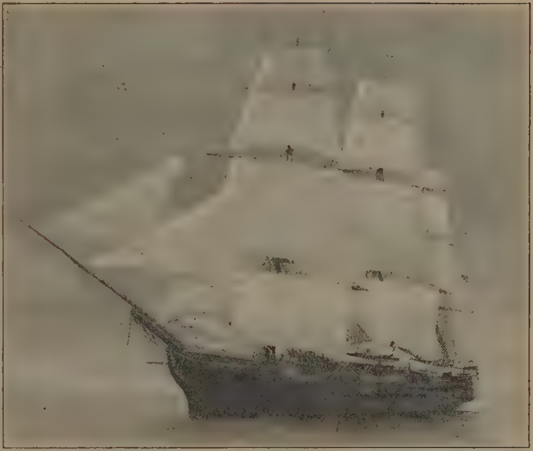

U.S. Navy Department Photograph

Figure 479. An old-time sailing vessel. Long before steamships were invented, American sailing vessels were trading in all the important ports of the world.

The colonists could offer in trade furs, salted fish, lumber, ships, and various wood products from the northern colonies, tobacco from Virginia and Maryland, and rice from the Carolinas and Georgia. The West Indies had become the world's great source of sugar and molasses, the work on the plantations being done by negro slaves from Africa. To the West Indian planters the colonists sold barrel staves, heads, and hoops for making barrels for molasses, and salted fish for food for the slaves. To western Europe they sent furs, fish, tobacco, rice, wooden ships, and lumber.

In exchange for these exports the colonists received manufactured goods from Europe and sugar and molasses from the West Indies. In time what was called the "triangular trade" grew up. Ships left New England loaded with cargoes part of which were exchanged at European ports for manufactured goods and for luxuries such as wines and spices. Sailing southward from Europe, the ships called at African ports, where the captains exchanged some of the goods brought from home for slaves. The ships then sailed for the West Indies, where the slaves were exchanged for sugar and molasses. Returning from the West Indies, the ships often called at various ports along our Atlantic coast, leaving and taking on goods here and there. This triangular trade was very profitable, and many shipowners made fortunes. In 1745 New England had about a thousand ships engaged in foreign trade.

The beginning of trade with the Orient. In 1784 an American ship sailed for the first time to China. This was the beginning of our trade with the Oriental countries. That trade grew slowly, for the trip was long and dangerous for sailing vessels, and the Chinese did not welcome foreign ships in their ports. But for the ships which made the trip successfully, there was much profit in the Oriental trade. On their outbound voyages they carried cargoes of manufactured goods, and they returned loaded with tea, silks, china, and other products of the Oriental countries.

Our cotton trade. After the invention of the cotton gin in 1792, the planters of the South began to raise larger and larger crops of cotton. Raw cotton was in great demand in England, and for that reason the foreign trade of the Southern States increased rapidly. In 1821, the first year for which we have figures concerning our foreign trade, raw cotton was our leading export. We were then exporting more cotton than any other country, and we have continued to do so to this day. For many years Great Britain took the largest quantities of our exports of raw cotton. Today Germany is our best customer for cotton, and Great Britain is second. *See Figure 480.*

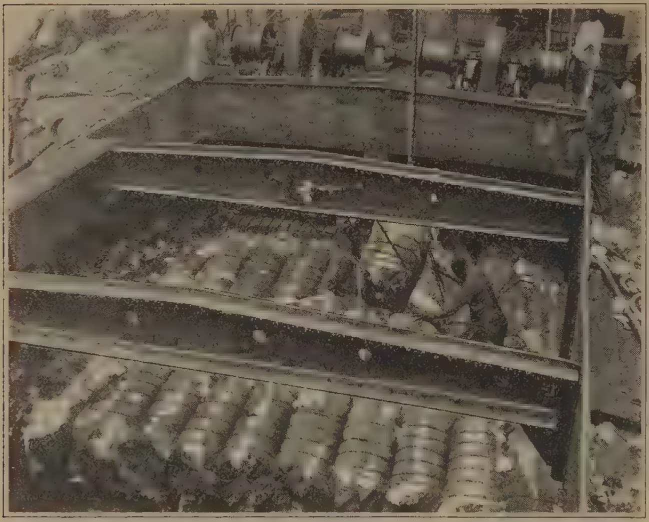


Figure 480. Loading bales of cotton in the hold of an ocean freighter at a Southern seaport. Every year hundreds of ships carry cotton from our seaports to foreign countries.

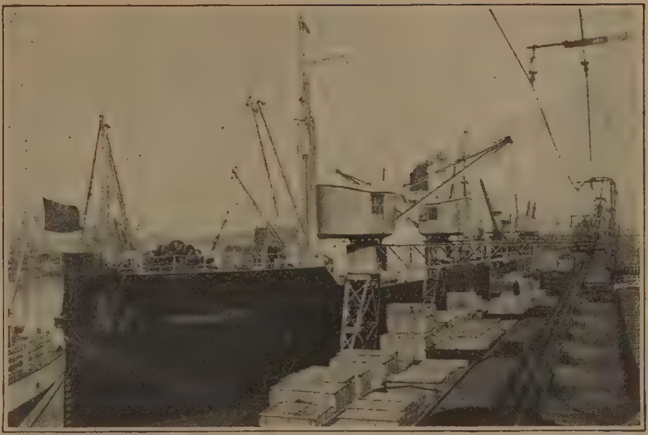
The influence of manufacturing on foreign trade. All through the early days in the history of our country, and as long as we were chiefly an agricultural nation, manufactured goods were our leading imports. Our leading exports were surplus foodstuffs and raw materials, which went largely to the countries of western Europe.

As manufacturing increased, and many people left the farms to work in mills and factories, our surplus of foodstuffs and raw materials for export began to decrease, and we even began to import some of the raw materials for our manufacturing industries. As you know, we have now become the leading manufacturing country of the world. As a result, we export more and more manufactured goods each year, and less and less food; and we import more and more foodstuffs and greater and greater quantities of raw materials.

Our leading exports. Table 35 on page 518 shows what our leading exports are today. Notice that raw cotton heads the list. Then come petroleum and its products (chiefly refined oils), machinery (industrial, agricultural, and electrical), automobiles (including parts and accessories), and iron and steel-mill products. From the list name our leading exports of raw materials and of foodstuffs.

If we divide all our exports into three groups — foodstuffs, raw materials, and manufactured goods — we find that manufactured goods are well in the lead, raw materials are second, and foodstuffs are third. Raw cotton is, of course, by far the most important raw material which we export, and wheat and flour, meat, and lard are our leading exports of foodstuffs. Our exports, then, are largely the products of our manufacturing plants and our farms and ranches.

Our best customers. More of our exports go to Europe than to any other continent, and our best single customer among all the countries of the world is Great Britain. Our second-best customer is our neighbor, Canada. Then come Germany, Japan, and France. *See Figure 481.*



U.S. Shipping Board

Figure 481. American-made automobiles being unloaded at the port of Havre in France. The crated automobiles are lifted from the ship and lowered into waiting freight cars.

Table 33 on page 517 shows that we export goods to every continent. What countries are our best customers in South America? What countries of Europe rank next after Great Britain, Germany, and France as buyers of our products? What country of Asia ranks next to Japan?

To the industrial countries of Europe we send large quantities of raw cotton, much copper, wheat, flour, meat, and lard, many automobiles, and large quantities of mineral oils, especially gasoline. Our chief exports to Argentina and Brazil, our best customers in South America, are automobiles, motor trucks, and busses, machinery of various kinds, and gasoline, kerosene, and other mineral oils.

Japan is by far our best customer in Asia for raw cotton. The Japanese also purchase from us large quantities of mineral oils, many automobiles, various metal products such as sheets of steel and tin and bars of copper, and considerable quantities of wheat and leaf tobacco. Our leading export to China is kerosene, as it is to many of the more backward countries of the world. Can you explain why? The Chinese also purchase from us much leaf tobacco and many cigarettes, and considerable quantities of raw cotton and wheat flour. Australia and South Africa provide good markets for some of our manufactures, especially automobiles, and for mineral oils.

Our export trade with Canada consists largely of shipments of industrial, agricultural, and electrical machinery, automobiles and parts, coal and mineral oils, iron and steel, and raw cotton. To Mexico, our neighbor on the south, we ship much mining machinery and many automobiles and motor trucks. Cuba, our best customer in the West Indies, looks to us for various foodstuffs, especially lard and flour, and for the greater part of its imports of cotton cloth, mineral oils, automobiles, and iron and steel.

The preceding paragraphs are but a brief summary of our trade with our best customers, but they show that our surplus products vary sufficiently so that we are able to supply many of the needs of the industrial countries on the one hand, and of the agricultural countries on the other.

U. S. Shipping Board

Figure 482. Bales of raw silk in a storage warehouse at Seattle. Why do most of our imports of raw silk enter the country through ports on the Pacific coast?

Some graphs to make. 1. Make a graph showing the comparative values of our ten leading exports. Use the figures given in Table 35 (p. 518).

2. Make a graph showing the percentage of our exports, by value, taken by each of the ten countries which are our best customers. Use the percentages given in Table 33 (p. 517).

Our leading imports. Table 36 on page 518 gives a list of our leading imports by value. The first place is held by raw silk, which comes chiefly from Japan and China. Next comes coffee, chiefly from Brazil. Crude rubber, which we import largely from British Malaya and the East Indies, ranks third, and cane sugar, chiefly from Cuba, ranks fourth. Read the rest of the list of imports in Table 36, and see if you can tell the chief sources from which we purchase them. Among the imports, which ones are products which we cannot obtain from home sources?

If we divide our imports into the three main classes, as we did our exports, we find that raw materials and partly manufactured products for use in our mills and factories lead, foodstuffs are second, and finished manufactured goods are third. "Partly manufactured products" are products such as paper pulp, sheets of tin, and refined copper, which go through further manufacturing processes after they reach our country. It is fair, then, to include them in the class of raw materials for manufacturing.

This classification shows that as a nation we need from distant lands more products for use in our industrial plants than for any other purpose. Next, we need foodstuffs, chiefly those which we do not produce at all in this country, or which we do not produce in sufficient quantities to meet our needs. Finally, we import many manufactured products from other countries. Practically all these manufactures we produce also in our own mills and factories, but for one reason or another we import additional supplies. For example, imported woolen goods and cotton goods of certain kinds are very popular, but we could easily get along without them if necessary.

Where we make our greatest purchases. At present we are buying the largest percentage of our imports, by value, from Canada. Heading the list of our Canadian imports is newsprint, or paper for printing newspapers. Next in order come lumber of various kinds, and wood pulp. What industries in our country, then, depend partly on our import trade with Canada? From the Canadians we purchase also large quantities of wheat, copper, nickel, pulp wood, and furs. Nickel is a metal which we need in large quantities but do not produce, and it is fortunate for us that Canada, which produces more than nine tenths of the world's supply of this metal, is our next-door neighbor.

Our next largest purchases are made in Japan. The reason our import trade with the Japanese is so great is that we buy from them by far the greater part of our raw silk. Other imports from Japan of considerable importance are silk goods, tea, canned crabmeat, and china. *See Figure 482.*

Other countries of Asia from which we purchase products which we need are British Malaya, China, and India. To British Malaya we look for large quantities of rubber and tin; to China for part of our supplies of raw silk, furs, and wool; and to India for large quantities of burlap, raw jute, and jute bags, and for goat and kid skins. Ceylon, India, and China, together with Japan, supply us with most of our tea.

After Canada and Japan, we make our next largest purchases in Great Britain. That is because British mills and factories turn out many high-grade manufactures which we desire. Chief among them are textiles, especially woolen and linen goods, which we import in large quantities.

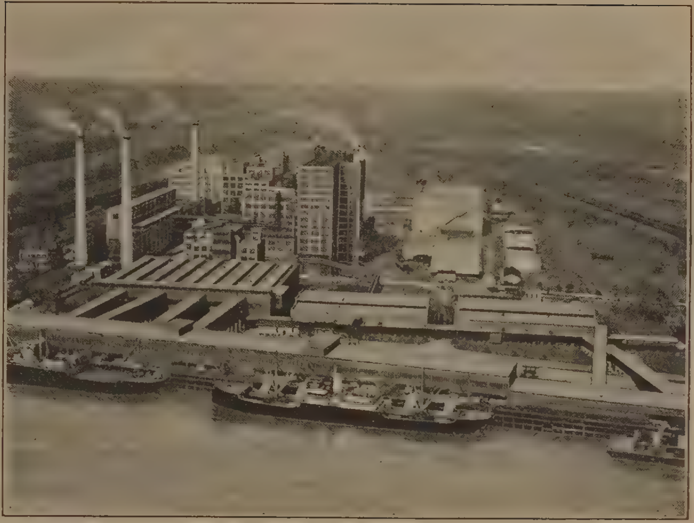


Figure 483. Freighters unloading raw sugar from Cuba at a large sugar refinery in New Orleans. What reasons can you give for the fact that this Southern port is a great sugar-refining center?

Among all the continents, Europe furnishes us with the largest percentage of imports by value. From Germany we buy many different manufactures, many furs, and large quantities of dyes and other chemicals which we use in our manufacturing industries. From France we buy many luxuries such as high-grade gloves, fine silk fabrics and underclothing, pearls and other precious stones, and perfumes. From Italy we buy large quantities of cheese and olive oil. In fact, there is no country of Europe from which we do not import products of one kind or another.

Among the South American countries we make our largest purchases in Brazil, Argentina, Colombia, and Chile. As you know, Brazil furnishes us with most of our coffee. From Argentina our most valuable purchases are cattle hides and flaxseed; from Colombia, coffee and crude petroleum; and from Chile, nitrate and copper.

Cuba ranks high in our import trade chiefly because we buy so much sugar there. From Mexico we import large quantities of crude petroleum for refining, much copper and lead, practically all our sisal hemp, and considerable quantities of coffee. Several of the Central American countries send us coffee or bananas, or both. *See Figure 483.*

Some graphs to make. 1. Make a graph showing the comparative values of our ten leading imports. Use the figures given in Table 36 (p. 518).

2. Make a graph showing the percentage of our imports, by value, from the ten countries from which we make the greatest purchases. Use the percentages given in Table 34 (p. 518).

Could we get along without imports? Since our country is so large and has such a great variety of resources, many American people think that we might get along easily without any imports. As you read the next few paragraphs, decide whether or not this is true.

How our supply of foodstuffs would be affected. If all our imports were suddenly cut off, we should soon find ourselves without coffee, tea, cocoa, and bananas, and we should face a serious shortage of sugar and vegetable oils. We should have to make up our minds to do without coffee, cocoa, and bananas entirely, for the climate of our country does not permit us to produce them. We might grow our own tea, but hand labor is so costly in the United States that very likely only the rich would be able to buy much tea. We could probably provide for our needs of sugar by growing more sugar beets, and in one way or another we could supply the vegetable oils that we need.

Among the other foodstuffs which we now import in large quantities are currants from Greece, figs from Asiatic Turkey, dates from Arabia, olive oil from Italy and Spain, lemons from Sicily, nuts of various kinds from the Mediterranean countries, butter from fourteen different countries, and cheese from twenty-four. Until such time as our farmers might greatly increase their production of these foodstuffs, we should have to cut down our consumption of them.

We should not starve, and we should not even go hungry if our imports of food supplies were cut off, but we should have less variety of food, and we should have to accustom ourselves to getting along without coffee and cocoa, and without chocolate for candy and flavoring.

How our industries would be affected. Our manufacturing industries would suffer greatly if our imports were cut off. For one thing, we should find ourselves without rubber. How would that affect the daily lives of large numbers of people? How would it affect transportation? Experiments in producing rubber from various plants are now being carried on in Florida, but it is not likely that we shall ever be able to produce more than a small proportion of the rubber that we need.

Officers of one of our great steel companies report that their business requires the importation of forty different products from fifty-seven different countries. Among the metals which the steel industry cannot do without are chromium and manganese. Our own ores of manganese are poor, and our home supply of chromite, or chromium ore, would not last five years at the present rate at which we use chromium. Think of all the ways in which the nation as a whole would suffer if the steel industry were handicapped by the lack of these two raw materials.

The leather-manufacturers report that they receive hides and skins from sixty different countries, and tanning materials from at least ten different countries. How would the cutting off of these imports affect the shoe-manufacturing business? Wool comes to us from at least thirty different countries, and without imports of this raw material our woolen-manufacturers would be forced to cut down their production for a long time to come, and perhaps always.

Without our imports of silk, most of our silk-manufacturers would probably have to go out of business. We could produce silk, for parts of our country are suitable for the growth of the mulberry tree, but silk production requires much patient hand labor, and such labor is so expensive in our country that silk goods would become a luxury which only the rich could afford.

The manufacture of telephones requires the use of silk from Japan, shellac and mica from India, nickel from Canada, flax from Ireland, cotton from Egypt, and platinum from Colombia and European Russia. Manufacturers of any of the many kinds of electrical equipment would find it extremely difficult to get along without raw materials imported from other countries.

Further study would give us many other examples of our dependence on imports from foreign countries. Should you like to see the United States try the experiment of getting along without imports?

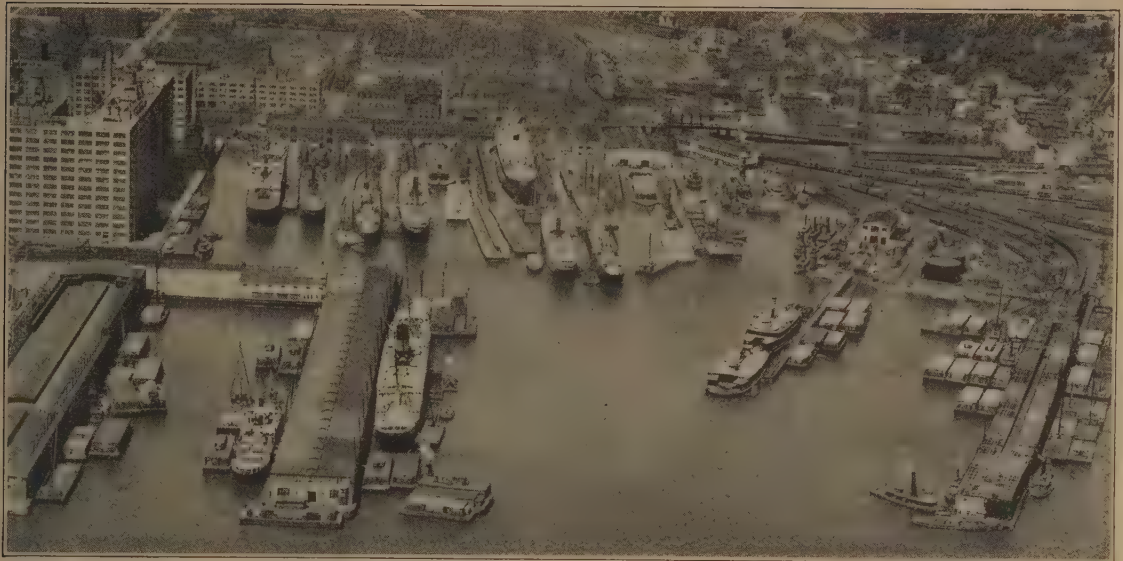


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Figure 484. A small portion of the water front at New York City, our greatest seaport. New York has many miles of piers and docks where ships from all over the world load and unload cargoes. Turn to Table 32 (p. 517) and compare the value of the foreign trade of New York with that of our other important ports.

Our place in the commerce of the world. Four countries carry on nearly half of all the international commerce of the world. Great Britain ranks first, carrying on about 15 per cent of the world trade. The United States ranks second, with about 14 per cent. Germany is third, with about 9 per cent, and France is fourth, with about 6 per cent. There is great competition in world trade, and the percentages vary somewhat from year to year. For the present, at least, Great Britain and the United States may be expected to remain in the lead as close rivals. *See Figure 484.*

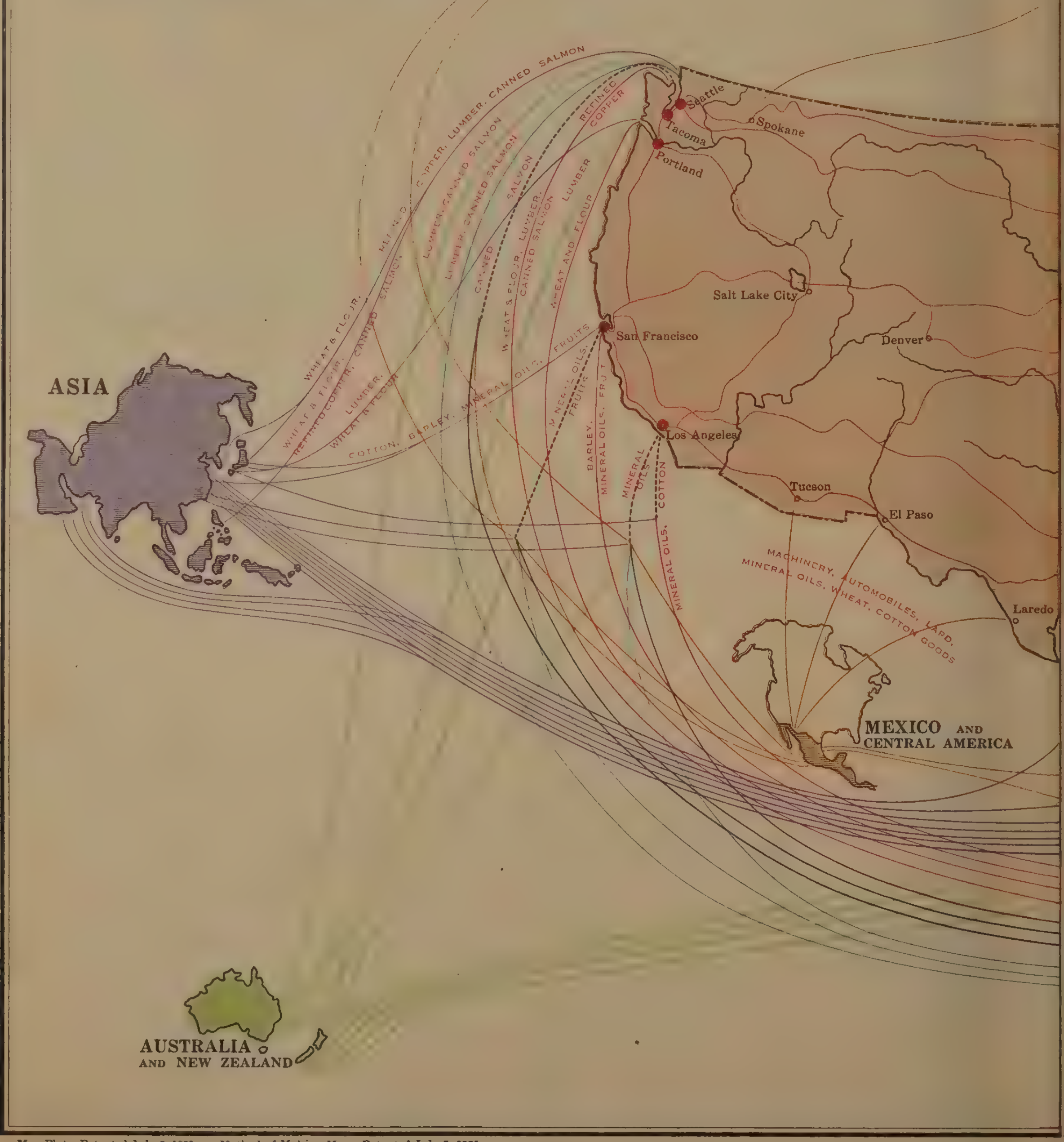
Special credit work. Select some foreign country in which you are especially interested and find out all you can about its trade with the United States. Make a report to your class on this subject.

Questions for class discussion. 1. Why is Great Britain the leading commercial country of the world? 2. What are the reasons for the large amount of trade between the United States and Canada? 3. What reasons have we to carry on trade with the people of the Orient? 4. What differences in climate between North America and South America affect the trade between the countries of these two continents? 5. How does the Panama Canal help our trade with the countries of eastern Asia? with the countries of South America?

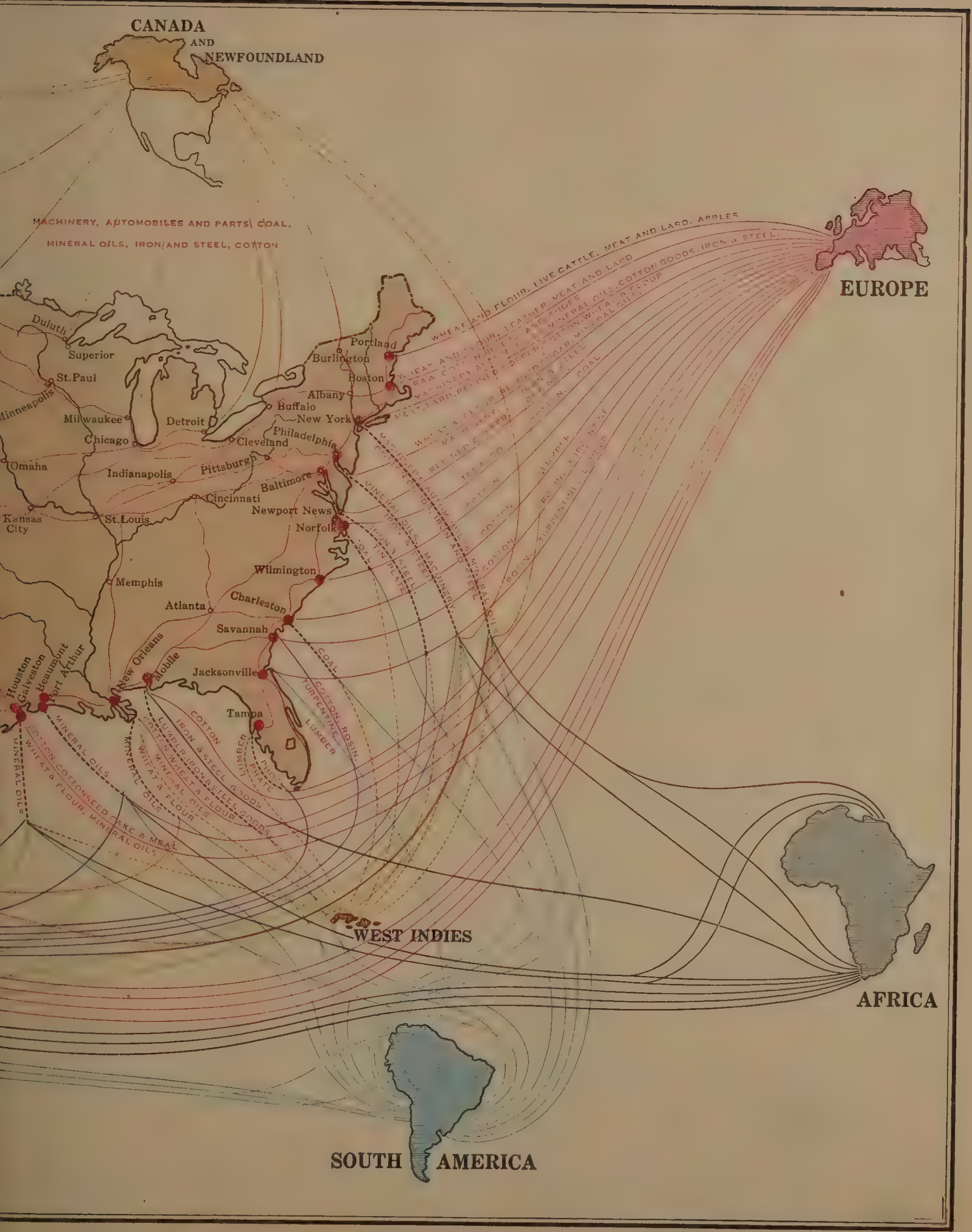
An import test. In the first column below certain products which we import from foreign countries are listed. The country from which each product is imported in largest quantities is to be found somewhere in the second column. Match the countries and the imports correctly.

1	burlap	1	Argentina	2
2	cattle hides	2	Brazil	3
3	coffee	3	British Malaya	5
4	nitrate	4	Canada	10
5	rubber	5	Ceylon	9
6	silk	6	Chile	4
7	sisal hemp	7	Cuba	8
8	sugar	8	India	1
9	tea	9	Japan	6
10	wood pulp	10	Mexico	7

A DIAGRAM SHOWING EXPORTS
FROM THE
UNITED STATES
TO
VARIOUS PARTS OF THE WORLD


ASIA
AUSTRALIA AND NEW ZEALAND
MEXICO AND CENTRAL AMERICA
Seattle
Tacoma
Portland
Spokane
Salt Lake City
San Francisco
Denver
Los Angeles
Tucson
El Paso
Laredo
COPPER, LUMBER, CANNED SALMON
WHEAT & FLOUR.
REFINED
WHEAT & FLOUR, REFINED COPPER, CANNED SALMON
LUMBER, CANNED SALMON
LUMBER, CANNED SALMON
LUMBER. WHEAT & FLOUR
SALMON
CANNED
WHEAT & FLOUR. LUMBER. CANNED SALMON
LUMBER
WHEAT AND FLOUR
REFINED COPPER
COTTON, BARLEY, MINERAL OILS, FRUITS
MINERAL OILS, FRUITS
BARLEY, MINERAL OILS, FRUIT
MINERAL OILS
COTTON
MINERAL OILS,
MACHINERY, AUTOMOBILES, LARD, MINERAL OILS, WHEAT, COTTON GOODS

Map Plate, Patented July 5, 1921 • Method of Making Maps, Patented July 5, 1921


CANADA AND NEWFOUNDLAND
MACHINERY, AUTOMOBILES AND PARTS, COAL,
MINERAL OILS, IRON AND STEEL, COTTON
EUROPE
WHEAT AND FLOUR, LIVE CATTLE, MEAT AND LARD, APPLES
MEAT AND LARD
COTTON GOODS, IRON & STEEL
MINERAL OILS
COAL
COTTON
ROSIN
TURPENTINE
LUMBER
MACHINERY
MINERAL OILS
IRON & STEEL
TIN PLATE
IRON AND STEEL
Duluth
Superior
St. Paul
Minneapolis
Milwaukee
Chicago
Detroit
Omaha
Indianapolis
Pittsburgh
Cleveland
Buffalo
Albany
Burlington
Portland
Boston
New York
Philadelphia
Baltimore
Cincinnati
Kansas City
St. Louis
Newport News
Norfolk
Memphis
Wilmington
Atlanta
Charleston
Savannah
Jacksonville
Tampa
New Orleans
Mobile
Houston
Galveston
Beaumont
Port Arthur
COAL
COTTON, ROSIN, TURPENTINE
LUMBER
COTTON
IRON & STEEL GOODS
LUMBER, IRON & STEEL GOODS
COTTON, WHEAT & FLOUR
MINERAL OILS
WHEAT & FLOUR
MINERAL OILS
MINERAL OILS
COTTON, COTTONSEED CAKE & MEAL
WHEAT & FLOUR, MINERAL OILS
MINERAL OILS
LUMBER
PHOSPHATE
WEST INDIES
AFRICA
SOUTH AMERICA

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Foreign-trade studies. The colored diagram on pages 506–507 shows the chief exports from our leading ports to distant lands. The companion diagram on pages 510–511 shows the chief imports of our leading ports from distant lands. The different colored lines will enable you to trace the exports to their destinations and the imports to their sources.

I. Use the export diagram in answering the following questions:

1. To what continent does the greater part of our surplus of raw cotton go? Why?
2. How widely are our exports of mineral oils distributed? What reason can you give for this?
3. Trace the exports of machinery, automobiles, and iron and steel from our north Atlantic ports to their destinations. What reasons can you give for their wide distribution?
4. To what continents do we export large quantities of wheat and flour? Why do the other continents buy so little of these products from us?
5. What continent takes the largest quantities of our exports of meat and lard? Why?
6. To what continents do our exports of copper go? Why do we not ship copper to the other continents?
7. What ports export large quantities of lumber? Why? How widely are our exports of lumber distributed? What reason can you give for this?
8. To what continents and what group of islands do we export much coal? Why?
9. What ports export large quantities of canned salmon? How widely are our exports of this fishery product distributed?
10. What fertilizer material do we export? To what two continents does most of it go, and why?
11. To what continent do we export much rosin and turpentine? What ports lead in the export of these products? Why?
12. To what continent do we export large quantities of tobacco? What ports lead in the export of tobacco? Why?
13. Why is our export trade greatest with Europe? Why is it least with Africa?

II. Now study the import diagram (pp. 510–511) and answer the following questions:

1. From what part of the world do most of our imports of raw silk come? Why do we need large quantities of raw silk?
2. From what parts of the Americas do most of our imports of coffee come? Why is coffee one of our leading imports?
3. From what part of the world does most of our rubber come? Why do we need to import large quantities of rubber?
4. From what group of islands do we import the most sugar? Through what ports does much of the sugar enter our country? Why?
5. From what country do we buy large quantities of newsprint? Why is that country a large producer of newsprint?
6. How widely distributed are the sources from which we receive wool, hides, and skins? Why do we import large quantities of these raw materials?
7. From what neighboring country do we import crude petroleum? Through what ports does the petroleum enter our country? Why?
8. Where do we obtain our imports of wood pulp? Why do we find it necessary to import wood pulp?
9. What materials for manufacturing fertilizers do we import? From what parts of the world do they come?
10. Where do we purchase most of our imports of bananas? of tea? of copra and coconut oil? of hemp? Explain why we need to import these products.

Seaport studies. Use the figures given in Table 32 on page 517 to make a graph showing the comparative rank of our leading seaports in value of foreign trade.

After you have completed the graph, locate each port first on the export diagram and then on the import diagram, and answer the following questions about its foreign trade:

1. What are the chief exports of this port? the chief imports?
2. How are the exports and imports connected with work in the city itself, or in the region or regions of the country for which it serves as an ocean gateway?

A REVIEW OF OUR ECONOMIC PROGRESS

During your study of the United States you have learned that our country owes its position in the world today to two major causes: (1) its wealth of natural resources and (2) the energy and intelligence of the people who have developed those resources. The following exercises will help you to prove that you have a real understanding of the reasons why, in a little more than a hundred and fifty years, the United States has grown from a small and unimportant country to be one of the leading countries of the world.

Some geographic helps to progress. The statements below sum up the more important geographic reasons for the growth and prosperity of our country. Read each one thoughtfully and then explain it fully.

1. The United States is one of the largest countries in the world. Of what advantage is its great size? What natural advantages has it over the other large countries — the Soviet Union, China, Canada, and Brazil?
2. The United States is located in the warmer part of the north temperate zone. What climatic advantages are due to its location? What relation is there between the climate and the health and energy of the people?
3. The United States is located between the regions of oldest civilization in the Old World, and in the midst of the younger nations of the New World. Explain the past and present advantages of this location.
4. The United States has a long coast line on the Atlantic Ocean and the Pacific Ocean. How has this double coast line helped in the development of the country?
5. The United States has many excellent harbors along its coasts. In what ways have they favored economic progress?
6. The United States has large areas of level or gently rolling plains. How have they contributed to its prosperity?
7. Large areas of the United States have more than 20 inches of rainfall a year. How has that affected the development of agriculture? What relation has it to our great wealth of forest resources?
8. The United States is richly supplied with the mineral fuels. What are they? Explain all the ways in which they have contributed to our growth and prosperity.
9. The United States is richly supplied with metal ores. How have they contributed to the economic development of the country?
10. The United States has many rivers and lakes. Explain all the ways in which they have helped in the economic growth of the country.

Our development of agriculture. 1. Explain how each of the following geographic factors has helped us to become one of the world's great agricultural countries:

surface conditions
soils
rainfall
growing season

2. Explain the ways we have found to make use of some of our drier lands for farming.

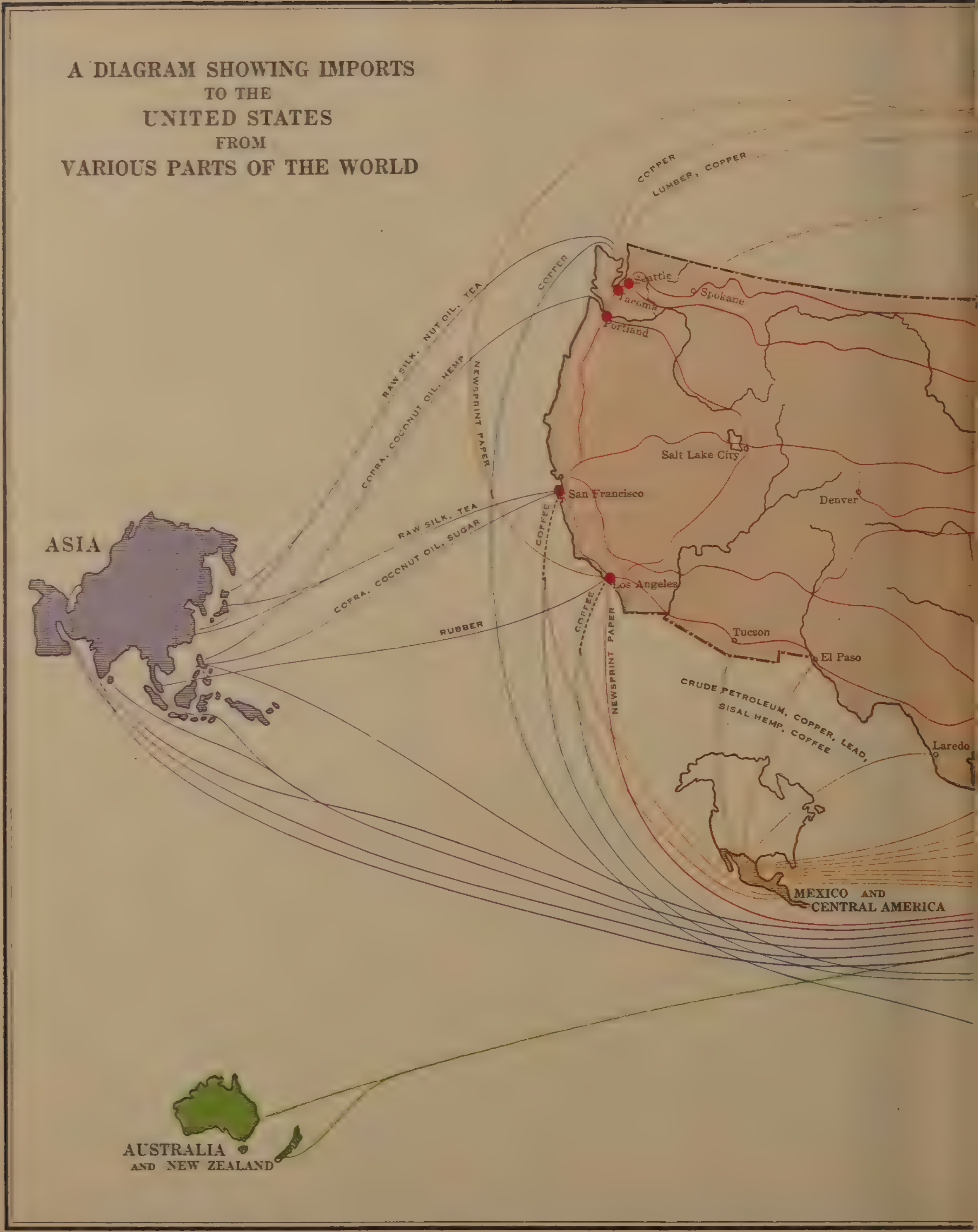
Our forest resources. 1. Make a summary of the use of our forests from the early days of settlement to the present time, explaining how they have contributed to our economic development.

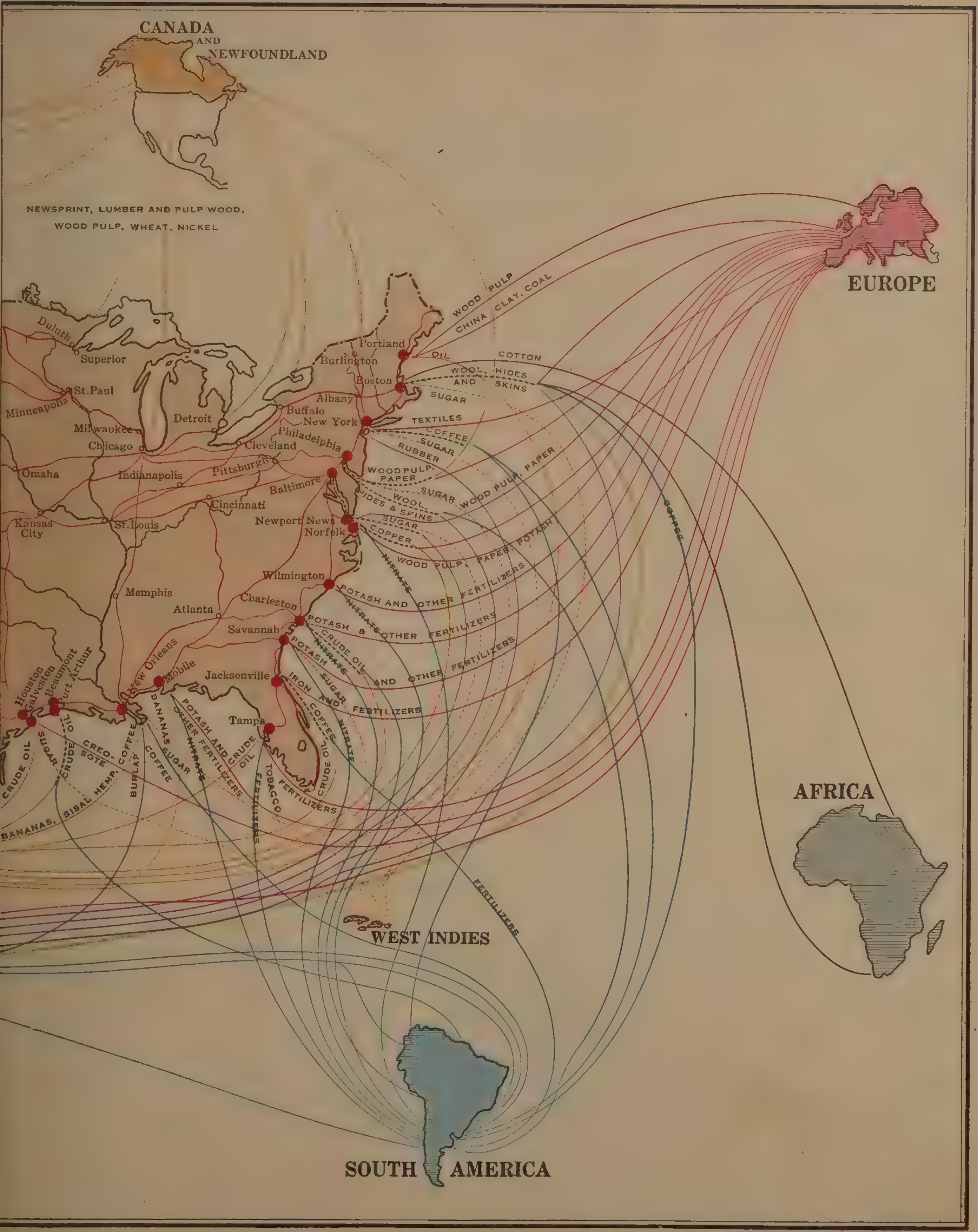
2. Tell how the center of our lumbering industry has migrated since colonial days. Give reasons for its migration, and explain why we should conserve our remaining forests.

Our industrial development. You have learned that during the last one hundred years the United States has become the world's leading manufacturing country. Explain the reasons for this, using the following topics as an outline:

1. Our wealth of raw materials. What are they? Where and how are they obtained? What industries have they made possible?
2. Our power resources. What are they? In what ways have they contributed to the growth of manufacturing?
3. Our industrial workers. Why have we plenty of workers for our mills and factories?
4. Our home markets. Why are our home markets for manufactures so large?
5. Transportation and manufacturing. How have better and better means of transportation led to increased manufacturing?
6. Foreign trade and manufacturing. How have they helped each other?

A DIAGRAM SHOWING IMPORTS TO THE UNITED STATES FROM VARIOUS PARTS OF THE WORLD


COPPER
LUMBER, COPPER
COPPER
RAW SILK, NUT OIL, TEA
COPRA, COCONUT OIL, HEMP
NEWSPRINT PAPER
Seattle
Tacoma
Spokane
Portland
Salt Lake City
San Francisco
Denver
ASIA
RAW SILK, TEA
COPRA, COCONUT OIL, SUGAR
COFFEE
Los Angeles
RUBBER
COFFEE
NEWSPRINT PAPER
Tucson
El Paso
CRUDE PETROLEUM, COPPER, LEAD,
SISAL HEMP, COFFEE
Laredo
MEXICO AND CENTRAL AMERICA
AUSTRALIA AND NEW ZEALAND


CANADA
AND
NEWFOUNDLAND
NEWSPRINT, LUMBER AND PULP WOOD,
WOOD PULP, WHEAT, NICKEL
EUROPE
WOOD PULP
CHINA CLAY, COAL
OIL
COTTON
WOOL, HIDES
AND SKINS
SUGAR
TEXTILES
COFFEE
SUGAR
RUBBER
WOOD PULP
PAPER
SUGAR
WOOD PULP, PAPER
WOOL
HIDES & SKINS
SUGAR
COPPER
WOOD PULP, PAPER, POTASH
NITRATE
POTASH AND OTHER FERTILIZERS
NITRATE
POTASH & OTHER FERTILIZERS
CRUDE OIL
NITRATE
POTASH AND OTHER FERTILIZERS
SUGAR
IRON AND FERTILIZERS
COFFEE
CRUDE OIL
NITRATE
COFFEE
Duluth
Superior
St. Paul
Minneapolis
Milwaukee
Chicago
Detroit
Omaha
Indianapolis
Kansas City
St. Louis
Cincinnati
Pittsburgh
Cleveland
Buffalo
Albany
Burlington
Portland
Boston
New York
Philadelphia
Baltimore
Newport News
Norfolk
Wilmington
Charleston
Savannah
Memphis
Atlanta
Jacksonville
Tampa
Mobile
New Orleans
Port Arthur
Beaumont
Galveston
Houston
CRUDE OIL
SUGAR
CRUDE OIL
CREOSOTE
BANANAS, SISAL HEMP, COFFEE
BURLAP
COFFEE
BANANAS SUGAR
NITRATE
OTHER FERTILIZERS
POTASH AND
CRUDE OIL
FERTILIZERS
TOBACCO
FERTILIZERS
CRUDE OIL
FERTILIZERS
AFRICA
WEST INDIES
SOUTH AMERICA

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REFERENCE MATERIAL

TABLE 1. DATES WHEN STATES WERE ADMITTED TO THE UNION

STATE	DATE OF ADMISSION	STATE	DATE OF ADMISSION	STATE	DATE OF ADMISSION
1. Delaware	1787	17. Ohio	1803	33. Oregon	1859
2. Pennsylvania	1787	18. Louisiana	1812	34. Kansas	1861
3. New Jersey	1787	19. Indiana	1816	35. West Virginia	1863
4. Georgia	1788	20. Mississippi	1817	36. Nevada	1864
5. Connecticut	1788	21. Illinois	1818	37. Nebraska	1867
6. Massachusetts	1788	22. Alabama	1819	38. Colorado	1876
7. Maryland	1788	23. Maine	1820	39. North Dakota	1889
8. South Carolina	1788	24. Missouri	1821	40. South Dakota	1889
9. New Hampshire	1788	25. Arkansas	1836	41. Montana	1889
10. Virginia	1788	26. Michigan	1837	42. Washington	1889
11. New York	1788	27. Florida	1845	43. Idaho	1890
12. North Carolina	1789	28. Texas	1845	44. Wyoming	1890
13. Rhode Island	1790	29. Iowa	1846	45. Utah	1896
14. Vermont	1791	30. Wisconsin	1848	46. Oklahoma	1907
15. Kentucky	1792	31. California	1850	47. New Mexico	1912
16. Tennessee	1796	32. Minnesota	1858	48. Arizona	1912

TABLE 2. POPULATION OF THE UNITED STATES AT 10-YEAR INTERVALS

(Exclusive of Alaska and Other Territories)

CENSUS DATE	POPULATION	CENSUS DATE	POPULATION
1790	3,929,214	1870	38,558,371
1800	5,308,483	1880	50,155,783
1810	7,239,881	1890	62,947,714
1820	9,638,453	1900	75,994,575
1830	12,866,020	1910	91,972,266
1840	17,069,453	1920	105,710,620
1850	23,191,876	1928	120,013,000*
1860	31,443,321		

TABLE 3. IMMIGRATION QUOTAS†

COUNTRY OF BIRTH	ANNUAL QUOTA	COUNTRY OF BIRTH	ANNUAL QUOTA
Austria	1,413	Lithuania	386
Belgium	1,304	Netherlands	3,153
Czechoslovakia	2,874	Norway	2,377
Denmark	1,181	Poland	6,524
Estonia	116	Portugal	440
Finland	569	Rumania	295
France	3,086	Spain	252
Germany	25,957	Sweden	3,314
Great Britain and Northern Ireland	65,721	Switzerland	1,707
Greece	307	Syria and Lebanon	123
Hungary	869	Turkey	226
Irish Free State	17,853	U. S. S. R.	2,784
Italy	5,802	Yugoslavia	845
Latvia	236		

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* Estimated by Bureau of Census on July 1, 1928.

† Figures indicate the number of immigrants admissible to the United States each year from each country having a quota of over 100.

TABLE 4. PRODUCTION OF WHEAT IN THE UNITED STATES

YEARLY AVERAGE FOR 1927–1929

STATE	BUSHELS
Kansas	142,407,000
North Dakota	126,315,000
Nebraska	66,767,000
Montana	66,101,000
Washington	50,663,000
Oklahoma	45,809,000
South Dakota	36,854,000
Illinois	31,440,000
Idaho	28,894,000
Texas	25,974,000
All other states	245,362,000
Total	866,586,000

TABLE 5. PRODUCTION OF CORN IN THE UNITED STATES

YEARLY AVERAGE FOR 1927–1929

STATE	BUSHELS
Iowa	429,876,000
Illinois	344,353,000
Nebraska	247,297,000
Missouri	158,716,000
Kansas	154,277,000
Indiana	140,743,000
Minnesota	138,376,000
Ohio	124,984,000
South Dakota	113,643,000
Texas	101,545,000
All other states	780,918,000
Total	2,734,728,000

TABLE 6. PRODUCTION OF COTTON IN THE UNITED STATES

YEARLY AVERAGE FOR 1927–1929

STATE	500-POUND BALES
Texas	4,469,000
Mississippi	1,582,000
Arkansas	1,245,000
Alabama	1,212,000
Georgia	1,158,000
Oklahoma	1,147,000
North Carolina	811,000
South Carolina	767,000
Louisiana	683,000
Tennessee	434,000
All other states	609,000
Total	14,117,000

TABLE 7. PRODUCTION OF TOBACCO IN THE UNITED STATES

YEARLY AVERAGE FOR 1927–1929

STATE	POUNDS
North Carolina	497,717,000
Kentucky	288,271,000
Virginia	117,052,000
Tennessee	83,974,000
South Carolina	80,643,000
Georgia	77,782,000
Pennsylvania	47,807,000
Wisconsin	42,137,000
Ohio	32,211,000
Connecticut	28,790,000
All other states	66,065,000
Total	1,362,449,000

TABLE 8. EXPORTS OF WHEAT FROM THE UNITED STATES

YEARLY AVERAGE FOR 1926–1928

COUNTRY OF DESTINATION	BUSHELS
Great Britain	60,175,000
Germany	16,451,000
Italy	9,063,000
France	7,649,000
Belgium	7,075,000
Netherlands	6,965,000
Japan	5,903,000
Irish Free State	3,836,000
Greece	3,498,000
All other countries	13,675,000
Total	134,290,000

TABLE 9. EXPORTS OF COTTON FROM THE UNITED STATES

YEARLY AVERAGE FOR 1926–1928

COUNTRY OF DESTINATION	500-POUND BALES
Germany	2,170,000
Great Britain	1,977,000
Japan	1,304,000
France	909,000
Italy	739,000
Russia in Europe	389,000
Spain	312,000
Canada	242,000
Belgium	228,000
All other countries	617,000
Total	8,887,000

TABLE 10. EXPORTS OF TOBACCO FROM THE UNITED STATES

YEARLY AVERAGE FOR 1926–1928

COUNTRY OF DESTINATION	POUNDS
Great Britain	168,643,000
China	99,181,000
France	36,371,000
Germany	29,801,000
Netherlands	27,086,000
Australia	21,445,000
Belgium	21,188,000
Canada	15,666,000
Spain	13,116,000
Japan	10,838,000
All other countries	76,809,000
Total	520,144,000

TABLE 11. EXPORTS OF HAMS, SHOULDERS, AND BACON FROM THE UNITED STATES

YEARLY AVERAGE FOR 1926–1928

COUNTRY OF DESTINATION	POUNDS
Great Britain	177,415,000
Cuba	27,257,000
Canada	9,759,000
Germany	8,941,000
Italy	5,536,000
Finland	5,140,000
Sweden	4,748,000
Poland and Danzig	4,670,000
Norway	3,790,000
Belgium	3,600,000
All other countries	16,251,000
Total	267,107,000

TABLE 12. EXPORTS OF LARD FROM THE UNITED STATES

YEARLY AVERAGE FOR 1926–1928

COUNTRY OF DESTINATION	POUNDS
Great Britain	227,096,000
Germany	188,044,000
Cuba	81,127,000
Mexico	48,745,000
Netherlands	41,681,000
Poland and Danzig	15,125,000
Canada	15,120,000
Colombia	14,983,000
Italy	14,872,000
Belgium	12,909,000
All other countries	53,627,000
Total	713,329,000

TABLE 13. PRODUCTION OF LUMBER IN THE UNITED STATES

YEARLY AVERAGE FOR 1925–1927

STATE	BOARD FEET
Washington	7,299,809,000
Oregon	4,221,323,000
Mississippi	2,859,761,000
Louisiana	2,856,115,000
Alabama	2,170,849,000
California (including Nevada)	2,100,587,000
Texas	1,493,530,000
Arkansas	1,422,543,000
Georgia	1,237,224,000
North Carolina	1,022,307,000
All other states	9,917,292,000
Total	36,601,340,000

TABLE 14. PRODUCTION OF IRON ORE IN THE WORLD

YEARLY AVERAGE FOR 1925–1927

COUNTRY	GROSS TONS
United States	63,800,000
France	39,500,000
Sweden	8,600,000
Great Britain	8,500,000
Luxembourg	7,200,000
Germany	5,700,000
Spain	4,100,000
U. S. S. R.	3,500,000
Algeria	1,800,000
India	1,700,000
Czechoslovakia	1,400,000
Chile	1,300,000
Austria	1,200,000
All other countries	6,700,000
Total	155,000,000

TABLE 15. PRODUCTION OF IRON ORE IN THE UNITED STATES

YEARLY AVERAGE FOR 1925–1927

STATE	GROSS TONS
Minnesota	37,700,000
Michigan	14,900,000
Alabama	6,800,000
Wisconsin	1,100,000
Pennsylvania	1,000,000
Wyoming	600,000
New York	500,000
New Jersey	200,000
Tennessee	100,000
All other states	900,000
Total	63,800,000

TABLE 16. PRODUCTION OF COPPER IN THE WORLD

YEARLY AVERAGE FOR 1926–1928

COUNTRY	GROSS TONS
United States	781,200
Chile	253,700
Belgian Congo	84,800
Canada	69,600
Japan	65,600
Mexico	59,000
Spain and Portugal	52,000
Peru	46,800
Germany	26,300
Cuba	13,200
All other countries	130,200
Total	1,582,400

TABLE 17. PRODUCTION OF COPPER IN THE UNITED STATES

YEARLY AVERAGE FOR 1926–1928

STATE	GROSS TONS
Arizona	314,900
Utah	122,900
Montana	109,200
Michigan	81,700
Nevada	57,500
New Mexico	38,000
California	12,000
Tennessee	7,400
Colorado	3,400
Alaska	2,500
All other states	31,700
Total	781,200

TABLE 18. PRODUCTION OF LEAD IN THE UNITED STATES

Yearly Average for 1926–1928

STATE	SHORT TONS
Missouri	207,100
Utah	152,700
Idaho	141,600
Oklahoma	62,900
Colorado	34,400
Montana	23,300
Kansas	16,400
Nevada	9,000
Arizona	8,900
Wisconsin	2,000
All other states	15,900
Total	674,200

TABLE 19. PRODUCTION OF ZINC IN THE UNITED STATES

Yearly Average for 1926–1928

STATE	SHORT TONS
Oklahoma	219,800
Kansas	114,300
Montana	78,900
Utah	48,000
Colorado	33,700
Idaho	28,100
Wisconsin	26,000
New Mexico	24,900
Missouri	19,200
Nevada	3,900
All other states	130,200
Total	727,000

TABLE 20. PRODUCTION OF GOLD IN THE UNITED STATES

Yearly Average for 1926–1928

STATE OR TERRITORY	FINE OUNCES
California	557,000
South Dakota	310,000
Alaska	307,000
Colorado	286,000
Arizona	207,000
Nevada	165,000
Utah	162,000
Philippine Islands	87,000
Montana	57,000
New Mexico	26,000
All other states	78,000
Total	2,242,000

TABLE 21. PRODUCTION OF SILVER IN THE UNITED STATES

Yearly Average for 1926–1928

STATE OR TERRITORY	FINE OUNCES
Utah	18,700,000
Montana	11,300,000
Idaho	8,500,000
Arizona	6,800,000
Nevada	5,700,000
Colorado	4,300,000
California	1,700,000
Texas	900,000
New Mexico	700,000
Alaska	600,000
All other states	500,000
Total	59,700,000

TABLE 22. PRODUCTION OF COAL IN THE WORLD

Yearly Average for 1926–1928

COUNTRY	SHORT TONS
United States	608,400,000
Great Britain	229,700,000
Germany	165,300,000
France	56,300,000
Poland	40,800,000
Japan and Taiwan	35,900,000
U. S. S. R.	32,400,000
Belgium	29,500,000
India	24,000,000
Czechoslovakia	15,900,000
All other countries	208,900,000
Total	1,447,100,000

TABLE 23. PRODUCTION OF COAL IN THE UNITED STATES

Yearly Average for 1926–1928

STATE	SHORT TONS
Pennsylvania	
Anthracite	80,600,000
Bituminous	136,900,000
West Virginia	140,400,000
Kentucky	65,100,000
Illinois	57,300,000
Ohio	19,600,000
Alabama	19,400,000
Indiana	19,000,000
Virginia	13,100,000
Colorado	10,100,000
Wyoming	6,600,000
All other states	40,300,000
Total	608,400,000

TABLE 24. EXPORTS OF COAL FROM THE UNITED STATES

Yearly Average for 1926–1928

COUNTRY OF DESTINATION	SHORT TONS
Bituminous	
Canada	14,000,000
Italy	800,000
Brazil	600,000
Cuba	600,000
West Indies (excluding Cuba)	600,000
Mexico and Central America	500,000
Argentina	500,000
France	200,000
All other countries	5,300,000
Total bituminous	23,100,000
Anthracite, total exports	3,600,000
Total bituminous and anthracite	26,700,000

TABLE 25. PRODUCTION OF PETROLEUM IN THE UNITED STATES

Yearly Average for 1926–1928

STATE	THOUSANDS OF BARRELS
Oklahoma	235,500
California	229,300
Texas	213,700
Arkansas	43,500
Kansas	40,300
Wyoming	22,800
Louisiana	22,600
Pennsylvania	9,500
Ohio	7,300
Illinois	7,100
All other states	25,900
Total	857,500

TABLE 26. EXPORTS OF PETROLEUM PRODUCTS FROM THE UNITED STATES

Yearly Average for 1926–1928

COUNTRY OF DESTINATION	THOUSANDS OF BARRELS			
	Gasoline	Kerosene	Gas and Fuel Oil	Lubricants
Argentina	1,300	300	2,900	300
Australia and New Zealand	3,500	900	1,000	500
Belgium	1,200	500	500	800
Canada	3,400	200	3,000	400
Chile			5,000	
China	200	3,300	1,000	200
France	7,300	1,600	500	1,500
Germany	1,400	800	1,300	1,100
Great Britain	14,700	3,100	5,200	2,100
India		1,200		
Japan	500	2,100	3,900	200
Netherlands	1,800	1,800	700	200
Panama			5,900	
Scandinavian countries	2,400	1,200	900	300
All other countries	8,200	4,100	7,900	2,300
Totals	45,900	21,100	39,700	9,900

TABLE 27. LEADING COUNTRIES IN POTENTIAL WATER POWER

COUNTRY	POTENTIAL HORSE POWER
Belgian Congo	90,000,000
French Congo	35,000,000
United States	35,000,000
India	27,000,000
Brazil	25,000,000
China	20,000,000
Canada	18,250,000
U. S. S. R.	16,425,000
French Cameroon	13,000,000
Norway	9,500,000
Nigeria and British Cameroon	9,000,000

TABLE 28. LEADING COUNTRIES IN USE OF WATER POWER, 1927

COUNTRY	HORSE POWER UTILIZED
United States	11,721,000
Canada	4,556,000
Italy	2,300,000
France	2,000,000
Norway	1,900,000
Switzerland	1,850,000
Japan	1,750,000
Sweden	1,350,000
Germany	1,100,000
Spain	1,000,000
Brazil	500,000

TABLE 29. LEADING MANUFACTURING CITIES OF THE UNITED STATES

Value of Manufactured Products, 1927

CITY	VALUE OF PRODUCTS
New York, N. Y.	$5,722,071,000
Chicago, Ill.	3,478,754,000
Philadelphia, Pa.	1,861,502,000
Detroit, Mich.	1,736,933,000
Cleveland, Ohio	1,040,754,000
St. Louis, Mo.	937,416,000
Baltimore, Md.	692,575,000
Buffalo, N. Y.	649,302,000
Milwaukee, Wis.	627,416,000
Boston, Mass.	618,692,000
Los Angeles, Calif.	610,166,000
Akron, Ohio	567,482,000
Pittsburgh, Pa.	508,529,000
Newark, N. J.	482,739,000
Cincinnati, Ohio	437,954,000
San Francisco, Calif.	429,728,000
Rochester, N. Y.	368,111,000
Toledo, Ohio	360,115,000
Minneapolis, Minn.	348,417,000
Indianapolis, Ind.	345,815,000
Omaha, Nebr.	307,472,000
Kansas City, Kans.	296,646,000
Jersey City, N. J.	270,842,000
Louisville, Ky.	242,696,000
Dayton, Ohio	235,166,000
Kansas City, Mo.	222,136,000
Richmond, Va.	220,743,000
Providence, R. I.	214,617,000
Paterson, N. J.	207,470,000
Youngstown, Ohio	207,379,000
Camden, N. J.	196,860,000
Worcester, Mass.	193,502,000
Columbus, Ohio	169,068,000
Seattle, Wash.	167,079,000
St. Paul, Minn.	160,331,000
Oakland, Calif.	159,376,000
Bridgeport, Conn.	158,697,000
Cambridge, Mass.	155,477,000
New Orleans, La.	151,893,000
Syracuse, N. Y.	147,903,000

CITY	VALUE OF PRODUCTS
Portland, Oreg.	$146,974,000
Grand Rapids, Mich.	135,254,000
New Bedford, Mass.	125,542,000
New Haven, Conn.	124,034,000
Reading, Pa.	121,095,000
Fall River, Mass.	120,324,000
Denver, Colo.	116,748,000
Atlanta, Ga.	115,830,000
Hartford, Conn.	111,089,000
Fort Worth, Tex.	109,637,000
Birmingham, Ala.	109,039,000
Yonkers, N. Y.	107,998,000
Trenton, N. J.	107,417,000
Springfield, Mass.	103,922,000
Houston, Tex.	102,154,000

TABLE 30. RAILROAD MILEAGE IN THE UNITED STATES

YEAR	MILES OPERATED
1830	22
1835	1,098
1840	2,818
1845	4,633
1850	9,021
1855	18,374
1860	30,626
1865	35,085
1870	52,922
1875	74,096
1880	93,262
1885	128,320
1890	156,404
1895	177,746
1900	192,556
1905	216,974
1910	240,831
1915	257,569
1920	259,941
1925	258,631
1927	259,639

TABLE 31. HIGHWAYS OF THE UNITED STATES, 1929

KIND OF ROAD	MILEAGE IN U. S.	PER CENT OF WORLD MILEAGE
Unimproved earth	2,390,144	60.3
Earth, sand, clay, gravel, graded, drained, or surface-treated	458,982	19.2
Waterbound macadam, including surface-treated	64,596	10.5
Bituminous or penetration macadam	30,153	78.4
Asphaltic or bituminous concrete	9,155	89.3
Cement concrete	55,274	95.7
Other kinds	7,977	.89
Total	3,016,281	38.7

TABLE 32. LEADING SEAPORTS OF THE UNITED STATES

By Value of Foreign Trade, 1928

SEAPORT	VALUE OF FOREIGN TRADE
New York, N. Y.	$5,070,260,000
New Orleans, La.	555,634,000
San Francisco, Calif.	409,978,000
Galveston, Tex.	358,923,000
Houston, Tex.	349,420,000
Seattle, Wash.	322,254,000
Philadelphia, Pa.	320,375,000
Boston, Mass.	281,230,000
Baltimore, Md.	229,969,000
Los Angeles, Calif.	178,506,000
Norfolk, Va.	161,313,000

TABLE 33. EXPORT TRADE OF THE UNITED STATES

With Continents and Chief Countries, by Value

	YEARLY AVERAGE 1927–1929	PER CENT OF TOTAL VALUE OF EXPORT TRADE
North America	**$1,274,000,000**	**25.1**
Canada	817,900,000	16.1
Cuba	137,400,000	2.7
Mexico	119,600,000	2.4
South America	**486,000,000**	**9.6**
Argentina	184,200,000	3.6
Brazil	99,200,000	2.0
Colombia	52,100,000	1.0
Chile	44,700,000	.9
Venezuela	39,300,000	.8
Europe	**2,392,000,000**	**47.1**
Great Britain	845,100,000	16.6
Germany	453,100,000	8.9
France	245,100,000	4.8
Italy	149,300,000	2.9
Netherlands	139,600,000	2.7
Belgium	114,000,000	2.2
Asia	**619,000,000**	**12.2**
Japan	268,300,000	5.3
China	143,500,000	2.8
Philippine Islands	78,300,000	1.5
India	57,500,000	1.1
Dutch East Indies	37,400,000	.7
Africa	**118,000,000**	**2.3**
Union of South Africa	58,400,000	1.2
Oceania	**189,000,000**	**3.7**
Australia	150,200,000	3.0
New Zealand	35,900,000	.7
Total	**$5,078,000,000**	**100.0**

TABLE 34. IMPORT TRADE OF THE UNITED STATES

With Continents and Chief Countries, by Value

	YEARLY AVERAGE 1927–1929	PER CENT OF TOTAL VALUE OF IMPORT TRADE
North America	**$976,000,000**	**23.1**
Canada	489,500,000	11.6
Cuba	220,700,000	5.2
Mexico	126,700,000	3.0
South America	**576,000,000**	**13.6**
Brazil	210,500,000	5.0
Argentina	104,700,000	2.5
Colombia	95,300,000	2.3
Chile	79,000,000	2.0
Venezuela	39,600,000	.9
Europe	**1,286,000,000**	**30.5**
Great Britain	345,400,000	8.2
Germany	226,500,000	5.4
France	166,000,000	3.9
Italy	109,300,000	2.6
Netherlands	84,900,000	2.0
Belgium	73,800,000	1.7
Asia	**1,235,000,000**	**29.2**
Japan	406,200,000	9.6
British Malaya	240,500,000	5.7
China	169,500,000	4.0
India	143,100,000	3.4
Philippine Islands	119,100,000	2.8
Dutch East Indies	86,600,000	2.0
Africa	**97,000,000**	**2.3**
Union of South Africa	9,200,000	.2
Oceania	**55,000,000**	**1.3**
Australia	34,000,000	.8
New Zealand	17,600,000	.4
Total	**$4,225,000,000**	**100.0**

TABLE 35. LEADING EXPORTS OF THE UNITED STATES, BY VALUE

Yearly Average for 1927–1929

Raw cotton	$839,000,000
Petroleum and products	524,200,000
Machinery	515,400,000
Automobiles, parts, and accessories	476,000,000
Iron and steel products	261,100,000
Wheat and flour	236,900,000
Meat, lard, and other packing-house products	192,600,000
Copper	167,800,000
Tobacco, raw	146,800,000
Cotton manufactures	134,300,000
Fruits and nuts	129,500,000
Lumber	110,600,000
Coal and coke	105,100,000
Chemicals	76,700,000
Rubber and manufactures	72,400,000
Leather	50,700,000

TABLE 36. LEADING IMPORTS OF THE UNITED STATES, BY VALUE

Yearly Average for 1927–1929

Raw silk	$392,500,000
Coffee	292,100,000
Crude rubber	275,300,000
Cane sugar	224,800,000
Newsprint	138,500,000
Hides and skins	133,600,000
Petroleum and products	129,900,000
Furs and manufactures	125,500,000
Wood pulp and other paper-base stocks	114,700,000
Copper	112,300,000
Tin	93,200,000
Fruits and nuts	86,900,000
Vegetable oils	85,800,000
Wool and mohair	83,400,000
Wool manufactures	78,600,000
Burlaps	74,900,000
Fertilizers	69,700,000
Art works	69,400,000
Cotton manufactures	68,300,000
Oil-seeds	68,200,000

INDEX AND PRONOUNCING WORD LIST

Key. ā as in āle; ă as in ăm; â as in senâte; â as in câre; ȧ as in ȧsk; ä as in ärm; *ă* as in *ă*ccount; *ȧ* as in sof*ȧ*; ē as in ēve; ĕ as in ĕnd; ê as in êvent; ẽ as in makẽr; *ĕ* as in rec*ĕ*nt; ī as in īce; ĭ as in ĭll; ō as in ōld; ŏ as in ŏdd; ô as in ôbey; ô as in ôrb; ǒ as in sǒft; *ŏ* as in c*ŏ*nnect; ū as in ūse; ŭ as in ŭp; û as in ûnite; û as in ûrn; *ŭ* as in circ*ŭ*s; ü as in menü; o͞o as in fo͞od; o͝o as in fo͝ot; oi as in oil; ñ as ny in canyon; ŋ as in iŋk; ɴ as in boɴ; ᴋ as ch in German ich; th as in then; tu̯ as in natu̯re; as in evil (ē′v′l)

Note. Map references are given thus: *161*, F 4. The number in italic type, *161*, = the map page; F 4 = the letter and number on the margins of the map. The F refers to the area between two meridians of longitude, and the 4 refers to the area between two parallels of latitude. The letter and the figure are to be used as guides in locating the place.

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